THE WESTERN EUROPEAN MARKET

FOR PROFESSIONAL SERVICES

1990 - 1995

INPUT

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Continuous-information advisory services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services (software, processing services, turnkey systems, systems integration, professional services, communications, systems/software maintenance and support).

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

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Market Analysis Programme—Europe

*The Western European Market for
Professional Services, 1990-1995*

MEROE •567 • 1990

MEROE

Abstract

Professional services account for nearly one third of the total software and services market in Western Europe. The high growth rates of this sector are encouraging many vendors to invest in growing their market share. The recent downturn in overall market growth for information systems is also causing many hardware vendors to seek a greater profit contribution from this sector.

This report analyses the market for professional services throughout Western Europe. It identifies the major trends, issues and opportunities for vendors, especially in the areas of custom software development and software maintenance. Forecasts are provided for all the major countries in Europe for 1990 through 1995. Categories of professional services separately identified and quantified are information systems consultancy, custom software, and education and training.

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I

Introduction

Introduction

A
Objectives

The purpose of this report is to identify opportunities within the professional services market and indicate in broad terms how this market is likely to develop over the next five years. In particular the report will:

- Give estimates of the size and structure of the professional services market for Western Europe and its growth potential to 1995.

- Identify the major forces at work in the market, especially:

    - The impact of new software products and development tools on the demand for custom software development and support.

    - The response of professional services vendors to their clients' heavy software maintenance workload.

- Assess possible major new opportunity areas for professional services vendors arising out of this changing structure of the user market.

- Recommend possible strategies for the 1990s for vendors in the professional services sector.

B
Scope

This report reviews the professional services market for Western Europe for the period 1990 to 1995.

The report analyses the following country markets:

- France
- Germany
- The United Kingdom
- Italy
- The Netherlands

- Benelux
- Spain
- Switzerland
- Austria
- Sweden
- Denmark
- Norway
- Finland
- Rest of Europe

Exhibit I-1 illustrates the structure of INPUT's representation of the professional services market. Detailed definitions of the terms used by INPUT are given in Appendix A.

Omitted from the analyses of professional services are user expenditures on:

- Professional services supplied as part of major systems integration contracts.

- Professional services bundled into a turnkey systems bid along with hardware and software products.

- Professional services supplied as part of a systems operations contract such as facilities management.

EXHIBIT I-1

Information Services Industry Structure—1990

Information Services Industry

Business Application Solutions

- Processing Services
  - Transaction
  - Utility
  - Other
- Turnkey Systems
  - Equipment
  - Software
  - Prof. Svcs.
  - Mainframe
  - Minicomputer
  - Workstation/PC
- Applications Software
  - Mainframe
  - Minicomputer
  - Workstation/PC

- Systems Software
  - Mainframe
  - Minicomputer
  - Workstation/PC
- Network Services
  - Electronic Information Services
    - Data Bases
    - News
  - Network Applications
    - VANs
    - EDI
    - Electronic Mail
- Professional Services
  - Consulting
  - Education & Training
  - Software Development

Systems Management Services

- Systems Operations
  - Processing Services
  - Prof. Svcs.
- Systems Integration
  - Equipment
  - Software
  - Prof. Svcs.
  - Other

Source: INPUT

C

Methodology

This report is based principally on research activities conducted by INPUT during 1990:

- A vendor research programme with more than 300 interviews of software and services vendors across Europe. Approximately 60% of those interviewed were active in the professional services sector.

- A further 200 vendor and user interviews across all European market sectors to determine trends and opinions.

- INPUT's continuous analysis of all the delivery modes comprising the computer software and services market.

INPUT's extensive library and data base of information relating to the software and services industry was also utilised.

In addition, 20 leading vendors across Western Europe that specialise in the professional services sector were specifically consulted, using the questionnaire in Appendix B.

D

Report Structure

This report examines the professional services sector of the software and services industry as follows:

Chapter II is an Executive Overview, which provides a management summary of the essential points of the entire report, including conclusions and strategic recommendations.

Chapter III sets out INPUT's estimates and forecasts of user expenditures on professional services and the relevant revenues of leading vendors across Europe as a whole.

Chapter IV is a country market analysis identifying market size and forecast, local issues, and leading vendor market shares country by country.

Chapter V presents the issues and trends identified during the study and includes analysis of strategic directions among professional services vendors.

Appendix A contains a detailed definition of the terms used by INPUT in the analysis of market sectors.

Appendix B is the vendor questionnaire used in this research.

Appendix C is the forecast database of user expenditure in local currency, country by country, on which the report is based.

Appendix D is the forecast database of user expenditure in ECUs, country by country.

Appendix E lists the exchange rate and inflation assumptions used for market analysis.

Appendix F shows the reconciliation between the 1989 report and the 1990 forecasts.

E
Related INPUT Reports

Readers may find it useful to refer to other INPUT reports which relate to the findings of this report:

- Overall Western European market reviews

  - *The Western European Market for Computer Software and Services, Forecast and Analysis, 1990-1995* (January 1991)

  - *The Challenge of the Single European Market—1992 and Beyond* (December 1989)

- Industry sector reviews

  - *European Software and Services Market, 1990-1995, Banking and Finance Sector*

  - *European Software and Services Market, 1990-1995, Insurance Sector*

  - *European Software and Services Market, 1990-1995, Discrete Manufacturing Sector*

  - *European Software and Services Market, 1990-1995, Process Manufacturing Sector*

  - *European Software and Services Market, 1990-1995, Distribution Sector*

- Vendor analysis programme

  - Over 300 profiles of prominent software and services vendors across Europe, which includes regular updates and new profiles.

II

Executive Overview
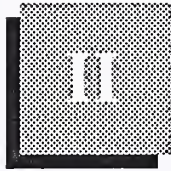
Executive Overview

The professional services market is the largest sector of the computer software and services business in Europe. It accounted for over 30% of the total Western European market in 1990, valued by INPUT at $19 billion, and approximately $1.5 billion more than the applications and systems software products sectors combined.

A

Summary and Conclusions

The European professional services market is highly fragmented. The market leader, IBM, holds only a 5% market share. Acquisitions and partnerships abound, but only a few companies can yet boast a pan-European presence, and most of those are either French or American. The continued rapid growth of the market is stimulating fiercer competition, resulting in new business strategies among both traditional suppliers and the newer entries. Three different strands of strategy are visible: early exploitation of new software technologies, standards and procedures to increase productivity; the broadening of existing client services to increase revenues; and new services aimed at gaining better access to board rooms and business decision makers in order to win new clients.

The Western European professional services market is forecast to grow at an average rate of 20% per year in user expenditures, from $19 billion in 1990 to $46 billion by 1995. The market includes activities such as information systems consultancy, custom software development and maintenance, and education and training. It *excludes* services that are provided specifically to other software and services market segments such as processing and network services, software products, turnkey systems and systems integration or operations.

The market supports service companies from many different origins. The greatest threats to traditional vendors, who usually specialise in developing software solutions for niche industry markets, come from:

- Management consultants or auditors who are responding to ever stronger client demand for information systems advice often linked directly to related business issues

- International equipment vendors who are seeking to replace lost hardware profit margins and retain account control, but are heavily dependent on partnership with the traditional vendors

The bulk of the professional services market has always been the development of software solutions to individual client requirements. However, the fastest growing subsegments are the activities that precede and follow the actual specification, writing, testing and installation of software—that is, the initial consulting services helping the client assess and choose options; and the education and training of managers, users and IS staff essential to the success of any project. Both these areas are predicted to grow at an average of 22% per year over the five-year period. This implies a gradual re-assignment of many professional services programming staff as the software development workload decreases relative to the increase in other services.

France is by far the largest European market for professional services. Equal to the combined value of the market in Germany and the United Kingdom, the French market is home to many of Europe's leading vendors, most notably Cap Gemini Sogeti. Cap Gemini Sogeti has secured a commanding lead over its independent competitors with a very active strategy of acquiring major software and services companies. The French have also established themselves well in Italy and the U.K. In contrast, the German market has always shown a strong preference for packaged software solutions and turnkey systems.

Pressure for improvements in productivity and quality has led most vendors to rapidly adopt technical strategies encompassing the latest software tools and methodologies such as relational databases, 4GLs, CASE tools and project management procedures. With some clients cutting budgets and more competitors crowding into the market, vendors have become more cost conscious. They are looking to new software technology not only to help them win business, but also to restore higher profit margins.

Software maintenance—revising and fixing software that is already in use—is a very minor part of the service offered by most professional services vendors. Yet there are reports that clients in IS departments are spending between 50% and 70% of their total budget on software maintenance. As competition increases for attractive new development

8

projects (the mainstay of most professional services business), more vendors are now turning their attention to this untapped opportunity. It is clear from those already engaged in profitable software maintenance that the precise nature of the service has to be tailored to the individual needs of each client.

The link between business success and IS investment is still very tenuous. But there is no doubt of the steady improvement in awareness of the critical need to link IS strategy very closely to business strategy. Professional services vendors who can already demonstrate their ability to bridge the gap and offer independent advice on both topics have a clear competitive advantage in Europe's board rooms. This is causing many vendors to try to extend their traditionally strong IS consulting capability into the business management arena—a more difficult task it would seem, than for a management consultancy extending its activities further into IS.

B
Changing Demand for Professional Services

Demand for professional services has never been stronger and continues to grow in spite of recessionary pressures looming over Europe. Exhibit II-1 lists the opportunities being offered to professional services vendors.

The industry is seeing the benefit of many client organisations turning away from their in-house corporate services and contracting out projects of high complexity or requiring scarce skills. This trend seems to be part of the general swing towards decentralisation of business management. It is matched by user concern to focus management attention back onto the problems of running and developing the business, rather than becoming expert in the field of complex computer systems.

The difficulties of recruiting IS experts persist, though some of the latest PC and workstation applications offer users some very powerful business tools without needing to resort to complex systems experts. Looking outside for an ever wider array of skills is becoming an accepted business practice—to the lasting benefit of those professional services vendors who can establish and keep a high-quality reputation for delivering results on time and within budget.

EXHIBIT II-1

Professional Services
Market Opportunities

- Outsourcing still growing
- Scarce skills sought outside
- Consultancy demand high
- Productive new technology
- Software maintenance untapped

One of the most sought-after skills is that of the strategic consultant. The expert who can bridge the gap between business needs and user IS requirements has become recognised as the architect of successful IS strategies and projects. Considered by some to be a hybrid manager— with both business and IS skills—an adequate supply of this type of IS architect is clearly essential to vendors and clients alike. After all, there are few signs that business organisations and information systems are going to become simpler in the future.

The fast flow of new software technology and software engineering methodologies continues to force rapid change on users and vendors alike. Many leading software and services vendors have introduced application architectures for the 1990s to guide developers and keep them loyal. The battleground for vendor preference has clearly shifted away from hardware platforms and towards software platforms. Professional services vendors who invest strongly in keeping up with the state of the art can offer an attractive service to users who have limited or out-of-date in-house IS expertise.

Software maintenance is a heavy load on any long-established IS department—it requires updating applications and systems software written years ago in an effort to keep pace with changing business needs. Some reports estimate that between 60% and 70% of IS budgets are consumed in this activity alone. This is a major opportunity for both service and product vendors, but remains largely untapped as a market. INPUT expects vendors to seek a larger share of user budgets through new ventures in this area. Users will be able to free up internal resources, allowing them to dedicate in-house staff to more technically innovative and attractive new projects.

C
Growth Market for Professional Services

EXHIBIT II-2

**Professional Services Market
Western Europe**
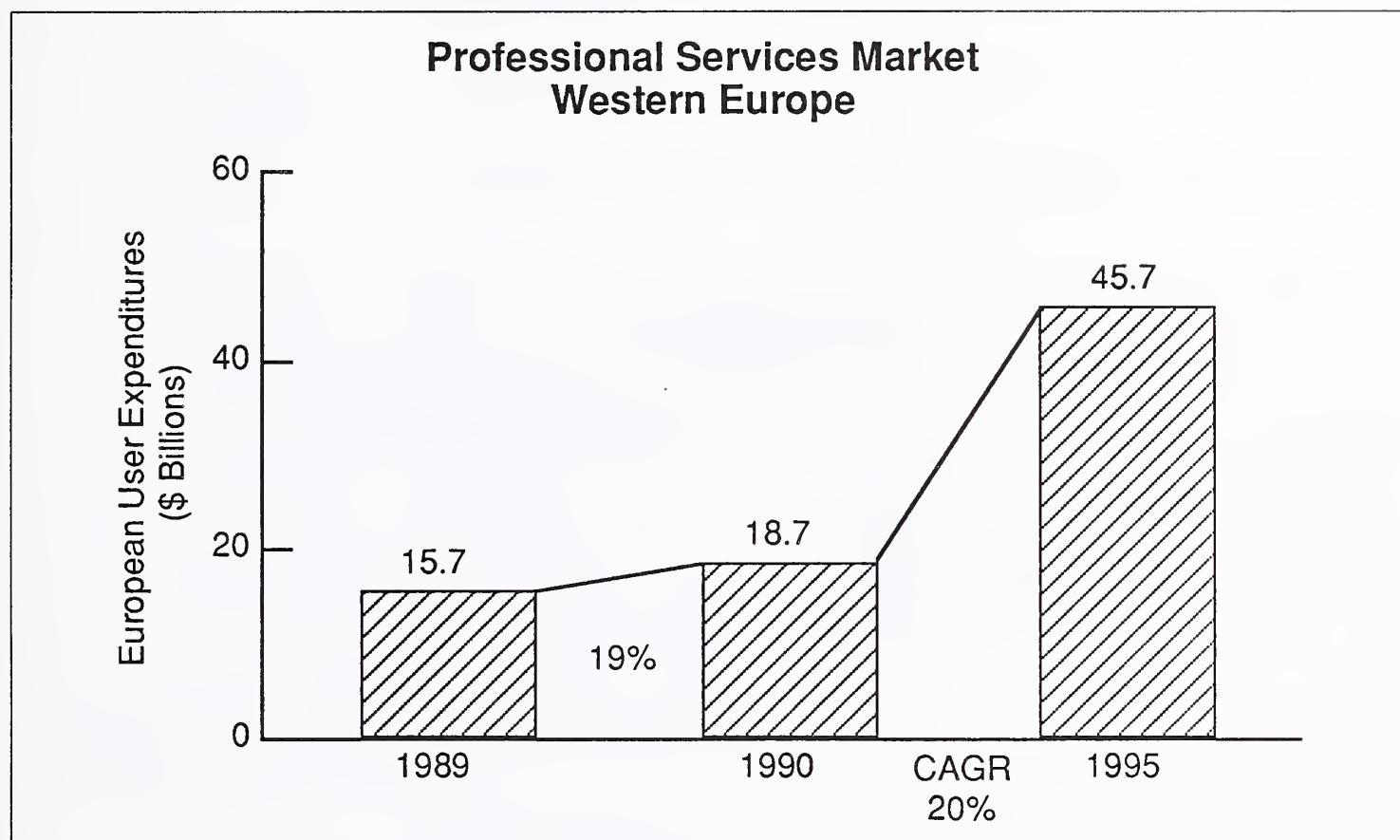
As shown in Exhibit II-2, INPUT expects the Western European professional services market to reach more than $45 billion by 1995, maintaining an average compound annual growth rate (CAGR) of 20%.

The market is expected to become increasingly competitive, as such healthy growth attracts new entrants, and companies already in the market work to increase their presence. U.S. equipment vendors such as IBM, Unisys and Digital are aggressively moving into professional services in their search for profit growth and account control as hardware profit margins fall. Software vendors such as Computer Associates, Oracle and Microsoft have also set their sights on professional services as an essential part of their product mix. Consultancy companies, traditionally strong in the IS side of management consultancy, continue to extend their capabilities very successfully into full IS project management and implementation.

Acquisition strategies are still well in evidence in the professional services market. Cap Gemini Sogeti, in acquiring a controlling interest in the U.K.'s Hoskyns, has now established itself as commanding leader of the independent vendors in all the major European markets.

EXHIBIT II-3

Professional Services Market Segments
Western Europe, 1990-1995

CAGR
(Percent)

Education and Training — 2.0 / 5.4 — 22

Custom Software Development — 14.3 / 33.6 — 19

Information Systems Consultancy — 2.4 / 6.6 — 22

▨ 1990
▨ 1995

User Expenditures ($ Billions)
0 5 10 15 20 25 30 35
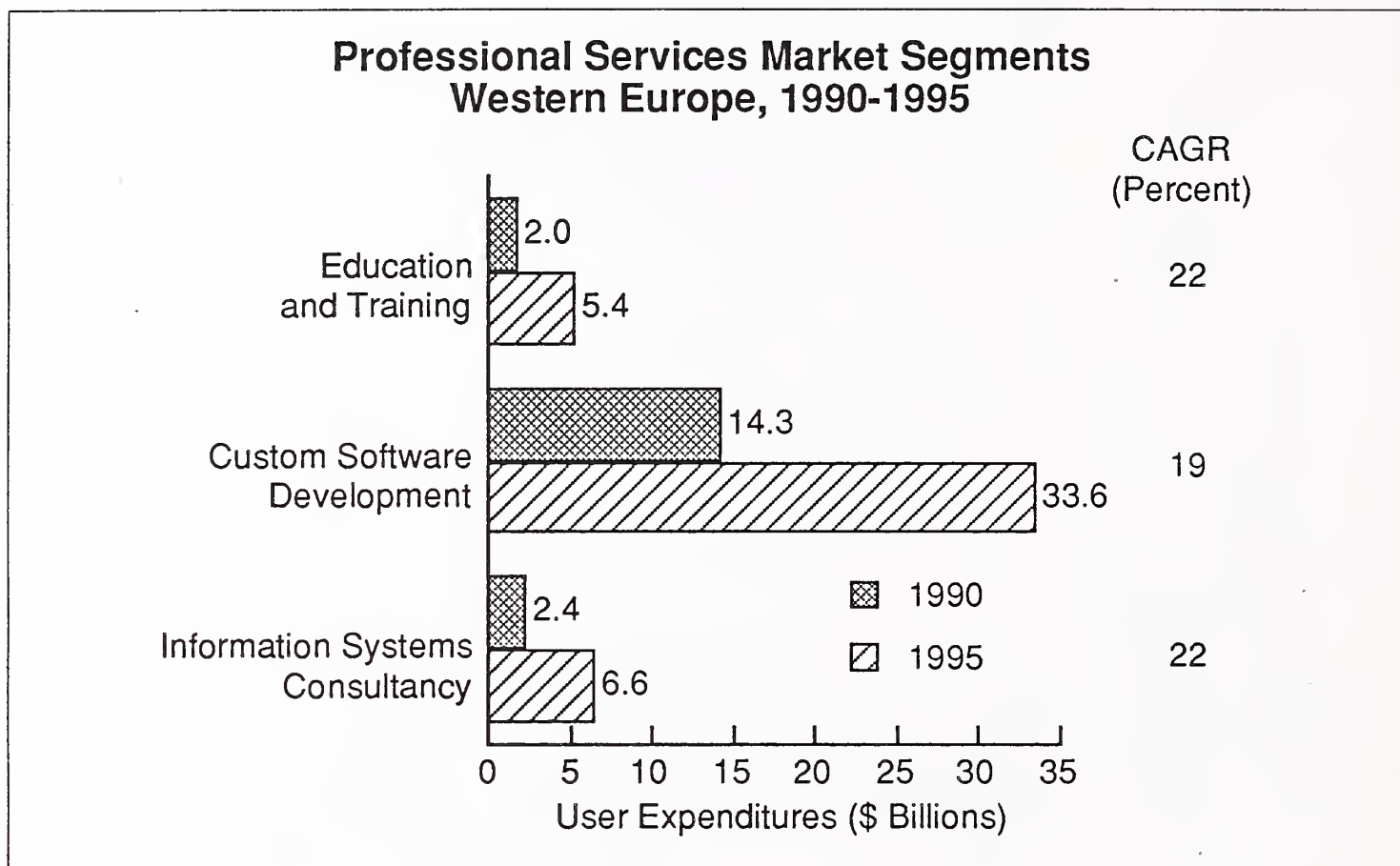
INPUT divides the professional services market into three subsegments. Exhibit II-3 shows the forecast for 1990-1995 for each segment:

- Information systems consultancy is benefiting from the growing awareness, especially among business managers at board level in user organisations, of the critical impact of IS strategy on the success of their business strategy. A growing number of companies are seeking outside advice in this area. The success of Andersen Consulting in Europe indicates that its client "partnership" and "one-stop-shop" approaches—offering a full set of professional services which lead on from its consulting activity—are highly attractive to clients. Of all the skills required for business success in IS consultancy, undoubtedly good project management still sits at the top of the list.

- Custom software development and maintenance is the largest subsegment in the software and services market, representing over 23% of the European total. This segment covers all the activities related to custom software projects, from defining requirements through to testing and modification, except client training. The major segment trends are:

- Adoption of blueprint or kernel application packages to form a consistent basis for custom developments;

- Widespread use of modern software platforms such as relational databases, 4GLs and structured design tools;

- Improved quality and project control through use of CASE tools, standards and structured methodologies;

- Function-rich application packages are replacing wholly custom built software.

The result is a change of emphasis for custom software development, as project content moves away from custom programming towards custom data definition and custom implementation of standard packages.

• Education and training, while perceived as a top priority by users, still receives less budget allocation than is necessary, though this position is expected to improve slowly, with market growth averaging 22% per year. Product training in the latest technologies and methodologies is the fundamental business. The re-training and career development of users following a successful system implementation is an area still under-exploited by education and training vendors.

EXHIBIT II-4

Professional Services Forecast
Western Europe, 1990-1995

Subsector	Market Forecast ($ Millions)				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	1,990	2,420	2,970	22	6,640
Custom Software Development	12,060	14,250	16,930	19	33,640
Education and Training	1,640	1,990	2,450	22	5,400
Total	15,690	18,660	22,350	20	45,680

Note: Systems Operations is reported as a separate category from 1990.

D

Positive and Negative Market Forces

EXHIBIT II-5

Professional Services Market Forces

Growth Drivers	Inhibitors
Board Awareness	Lower Budgets
Project Complexity	Poor Quality
Technology	Software Packages
Staff Shortages	Staff Training

Chapter V of this report analyses vendor opinions of the factors speeding or slowing growth of the professional services market. Exhibit II-5 summarises the key factors.

The main growth drivers are:

- Growing awareness of the critical role of IS in the success of businesses today;

- Ever-increasing complexity of IS systems and the projects to implement them;

- Availability of powerful, easy to use, high-quality new software tools and skill;

- Continued difficulty of recruiting, training and retaining in-house IS specialists.

The main obstacles to growth in professional services are:

- Evidence of users delaying projects and reducing budgets in the light of economic uncertainty and unacceptable financial justifications;

- Vendors' concern that quality improvements are taking too long to implement;

- Some vendors' concern that demand for programming skills will decrease as users switch to packaged solutions rather than custom-written software.

- Vendors being faced with the same staff training and retention problem as users.

E

Competitive Analysis

IBM's low, but leading, market share of 5%, as shown in the leading vendor table in Exhibit II-6, illustrates quite clearly the fragmented nature of the professional services market in Europe. Cap Gemini Sogeti comes a close second, its revenues not yet showing the contribution from Hoskyns. There is still considerable scope for consolidation in the industry, with Finsiel having the smallest pan-European presence of the top five.

Looking at the top 30 vendors reveals that 33% of revenues are from French companies and 29% are U.S. in origin, followed by 12% from Italy.

EXHIBIT II-6

Leading Professional Services Vendors
Western Europe, 1989

Rank	Vendor	County of Origin	Estimated Revenues ($ Millions)	Market Share (Percent)
1	IBM	U.S.	785	5.0
2	Cap Gemini Sogeti	France	715	4.6
3	Finsiel	Italy	285	1.8
4	Sema	France	250	1.6
5	Andersen Consulting	U.S.	240	1.5
6	Bull	France	240	1.5
7	Olivetti	Italy	220	1.4
8	Unisys	U.S.	190	1.2
9	Digital	U.S.	160	1.0
10	Volmac	Netherlands	155	1.0
	Others		12,450	79.3
	Total		15,690	100.0

F

Winning Strategies

As competition between professional services vendors increases and real growth rates slow, it becomes more important for vendors to have a clear position in the market. The threats to traditional professional services vendors from management consultancies, the major equipment manufacturers and the larger software product vendors require reaction and change. The implications of new platform technologies, methodologies and the resulting powerful applications software portfolios must be carefully considered.

Assuming that there is already a strong industry sector orientation to a vendor's professional services business, there are four natural elements of business growth strategy to consider, as listed in Exhibit II-7.

EXHIBIT II-7

Vendor Growth Strategies

- New Technology, Old Services
- New Services, Old Clients
- Old Services, New Clients
- New Services, New Clients

The first element of development strategy should address the problem of how to remain competitive—improving productivity and performance. Vendors need to maximise the use of new tools in order to remain competitive in professional services in terms of quality, costs and completion timescales. This requires imposition of software standards and procedures for both development and management of projects, a heavy continuous training programme for staff, and full management attention given to customers and the service they require.

The second element of strategy must be to consider how to win more business from existing client accounts, taking a larger share of their budget—for example, considering what software maintenance services could be packaged on a customer-by-customer basis. Careful assessment should be made of the types of new service clients would value, which should be the subject of test-marketing.

Thirdly, and requiring higher investment and higher risk, any strategy must consider how to better position the company to win more new name business, but using existing resources and familiar services. In many cases this will be best managed within industry sector or geographic

groupings, since past experience and a demonstrably deep understanding of niche markets are the most significant keys to success in winning new account business.

Finally, the strategy should assess the opportunities for building entirely new business. Inevitably, such a strategy requires high investment and poses the highest risk. The risk might be lowered by an acquisition strategy or a partnership strategy. There are many successful examples of both strategies in Europe, as well as no small number of failures. Moving up-market, gaining entry through a management consultancy to the board rooms of potential new clients, is one of the most attractive options. However it appears that a move in the opposite direction—diversifying down the demand chain from consultancy to software development and implementation—is the more successful manoeuvre at present.

Whatever the final strategic mix of business moves, the industry can look forward to continuing consolidations, take-overs and partnerships in the fight for maximum profit and market share. Fuelled by the unchanged trend to outsource more and more IS activities, the fight looks worth winning.

In the background there is a groundswell of self-sufficient IS users who may be starting to counter the slow demise of the large IS departments and the related good fortunes of the professional services vendors.

III
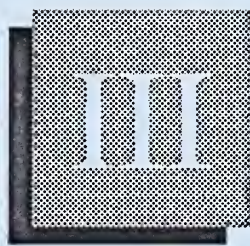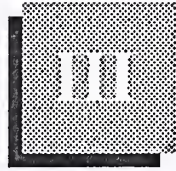
Market Overview

Market Overview

A

Industry Structure

INPUT divides the software and services industry into eight delivery modes. These delivery modes are:

- Processing services
- Turnkey systems
- Applications software products
- Systems software products
- Professional services
- Network services
- Systems integration
- Systems operations

INPUT divides the professional services market into three segments, the constituent parts of which are shown in Exhibit III-1:

- Information systems consulting
- Custom software development and maintenance
- Education and training

All three categories represent types of service offered in support of information systems. For example, education and training includes services like training in computer operations and management and video instruction related to computer usage, but it excludes training of most computer users in their normal job functions or discipline.

Similarly, consulting services exclude conventional management consultancy outside of the sphere of information systems, although it is clear that commercial information systems strategy cannot in practice be treated as separate from organisational or staff issues and business strategy.

EXHIBIT III-1

Professional Services Market Structure

Custom Software Development and Maintenance

- User Requirements Definition
- Systems Design
- System Conversion
- Programming
- Testing
- System Modification
- Documentation/ Technical Writing
- Network Development
- Contract Staff
- Other

Information Systems Consulting

- IS Strategy
- Installation Planning
- Information Systems Audit
- Security Audit
- Systems Evaluation
- Personnel Planning
- Systems Analysis
- Policies and Procedures Development (other than related to software development)
- Project Management
- Contractual Negotiation Advice
- Other

IS Education and Training

- Computer Operations Training
- Management Training
- Analyst/Programmer Training
- Systems Use Training
- Video Instruction (related to computer topics)
- Other

B

Forecast Assumptions

The market forecasts provided in this report cover the period 1990-1995 and include assessments for the base year of 1989. The forecasts have been formulated in local currency and converted into U.S. dollars for aggregation and comparative purposes. The U.S. dollar exchange rates used are listed in Appendix E.

The forecasts have been expressed in actual monetary terms and they therefore include an allowance for inflation. The general inflation assumptions made by INPUT in formulating these forecasts are also listed in Appendix E.

Exhibit F-1 in Appendix F shows the changes made in this year's forecast in comparison to that of the previous year. The principal reasons for these changes are:

- The general rise of European currencies against the U.S. dollar, which accounts for some 3.3% of the increase;

- A re-evaluation of the market size resulting from the research carried out for this report.

- The fact that the current indications of recession in Europe are assumed to be relatively short term, rather than applying to the whole five-year forecast.

- The growth in the popularity of outsourcing (contracting out any or all of the whole range of IT activities), which is assumed will continue as a reaction to recessionary pressures among user organisations and to the growing complexity of system solutions.

- The fact that leading computer manufacturers are expected to increasingly focus the market's attention on their software and services as they try to compensate for falling hardware margins with new revenue streams.

C

Western European Market

The professional services market continues to grow, as illustrated in Exhibits III-2 and III-3, from a 1989 user expenditure level of $15.7 billion to a 1990 level of $18.7 billion, representing an annual growth of 19%. Over the five-year forecast period professional services will grow at a 20% compound annual growth rate (CAGR), reaching user expenditures of $45.7 billion in 1995.

EXHIBIT III-2

Professional Services Market Segments
Western Europe, 1990-1995

CAGR
(Percent)

Education and Training
2.0
5.4
22

Custom Software Development
14.3
33.6
19

▨ 1990
☑ 1995

Information Systems Consultancy
2.4
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22

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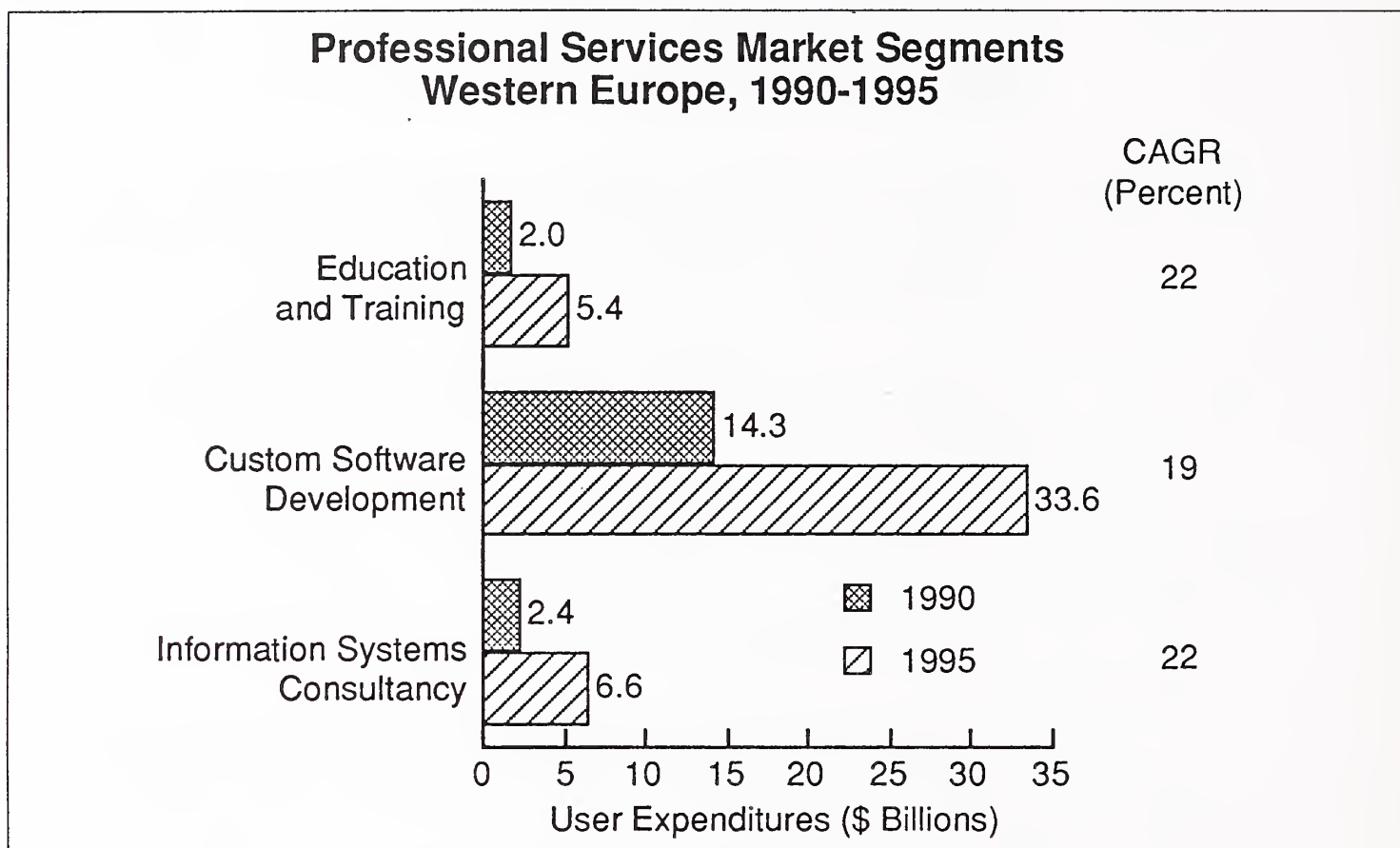
INPUT previously forecast the same 20% five-year growth rate; however, this year's forecast hides a fall in real growth rates, as inflation has risen around 2% across Europe as whole during the year. (See Appendix E for detailed assumptions of inflation and exchange rates.)

The continued high growth rates for professional services (as compared to many equipment markets, which have fallen into single-figure growth rates) result from ongoing demand for information systems, which will provide competitive edge and keep operating costs down. It also reflects the growing complexity of systems, which results in many user organisations having to seek outside specialist knowledge and skills. This is just one of the factors generating the thrust to outsource, or contract out, more and more IS-related activity. The main perceived benefit is that outsourcing leaves clients to concentrate their attention on developing their business skills rather than their computer systems skills.

1. Information Systems Consultancy

The consultancy segment of the professional services market is set to grow at an average of 22% per year between 1990 and 1995, as shown in Exhibits III-2 and III-3. Among management consultants, IS consultancy is the fastest growing sector, reflecting the competitive and

economic pressure on users to maximise the benefit of the IS investments, either in the traditional area of cost control, or in the less tangible area of competitive advantage.

Competition between vendors is increasing as more and more board-level clients accept that their information systems strategy is a critical element of their overall business strategy on which they need to take expert advice.

For many years such independent advice has been sought primarily from management consultants and auditing firms. Andersen Consulting is the most obvious example of an auditing company that has been highly successful in bridging the gap for clients between business and information systems advice and implementation. Andersen's success has encouraged both consultancies and software vendors to bridge the same gap, but not always with the same results.

Software vendors tend to employ a highly technically skilled work force, used to implementing application solutions at the client's request. This can be a far cry from the more "holistic" view of the client's business problem, which might result in proposals to change the way they do business and an information systems to support that new way. A different skill set is required from the vendor—this is common among management consultancies, but less common within software companies.

In a few cases the need to offer clients full service has led to acquisitions among consultancies and software vendors. An alternative must be the forging of strong partnerships between the two types of vendors in order to offer clients a coherent bridge between business and IS needs for consulting services.

All the elements of IS consulting listed in Exhibit III-1 are expected to grow at a similar pace. However, project management is likely to receive the most attention. As last year's report revealed, better management is needed to maintain profitable business growth in the face of threats such as:

- Increasing complexity of software and system solutions, which leads to increased staff specialisation and the need for larger teams to tackle projects.

- Financial pressures, which generate demand for:

  - Continuous increases in staff productivity

  - More emphasis on project progress and stage payments

  - More fixed-price contracts and penalty clauses

- Quicker return on IS investment by demanding early deliverables and shorter timescales.

- Customer awareness of poor quality, which can damage vendor reputation in the long term.

- Poor progress reporting, change controls and conflict management, which can result in unnecessary project failure or delay.

Of all the skills required for business success among vendors, undoubtedly good project management is at the top of the list.

EXHIBIT III-3

Professional Services Market Forecast, 1990-1995
Western Europe

Subsector	Market Forecast ($ Millions)				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	1,990	2,420	2,970	22	6,640
Custom Software Development	12,060	14,250	16,930	19	33,640
Education and Training	1,640	1,990	2,450	22	5,400
Total	15,690	18,660	22,350	20	45,680

Note: Systems Operations is reported as a separate category from 1990.

2. Custom Software Development

Custom software development is the most important software and services delivery mode in Europe, representing over 23% of the total software and services market. It is expected that as the Single European Act takes effect, the relative importance of custom software will slowly decrease, with a corresponding increase in the importance of application software products and turnkey systems.

As Exhibit III-1 illustrates, the custom software segment includes both the development and maintenance of software to specific client requirements. See also Exhibit III-3.

The major trends in custom software are:

- Adoption or development of applications software packages to act as the core for custom software development, rather than starting from scratch or modifying existing one-off custom software. The major benefit is that the core package(s) have been produced to the quality standards needed for replication, whereas most custom software is traditionally suitable for use by one client only. This offers improvements in both quality and speed of development for the final custom solution.

- Use of standard software platforms, such as relational databases, 4GLs, and structured design tools, on which to develop custom software. This offers benefits in terms of common skill profiles and much easier integration of applications. The popularity of Oracle, for example, can be seen to be moving systems away from a proprietary hardware platform and onto a proprietary software platform that runs on a wide (open) range of different hardware platforms, including UNIX systems.

- CASE tools and structured methodologies have also become part of the standard toolset for custom software developers in their hunt for better quality software and higher productivity. Further experience is required before such benefits can be proven in practical, measured, quality and productivity improvements.

- Quality improvement is now widely seen as mandatory for the software industry. The growing complexity of custom software projects has resulted in some spectacular financial disasters recently as systems have failed to meet their original specifications. Software developers and maintainers are often perceived as "licensed to write bugs"—with some justification, if there are few stringent controls on testing and proving new or modified software.

- Many user organisations are now finding that commissioning custom software is just too expensive, and additionally there is some requirement to change the working practices in their business. The pace of change in many business or industry sectors is just as fast as it is in the software and services industry. Instead of customising software to match their organisation, they are prepared to customise their organisation to match an existing application package, or reach some middle-ground compromise between these two extremes. As such full-featured application packages become available they will result in less demand for custom software.

Further discussion of the impact of these trends on vendors is provided in Chapter V.

3. Education and Training

Education and training, though perceived as a top priority by users, still receives a relatively low budget allocation, though this position is expected to improve slowly. The market segment is expected to grow by an average of 22% per year for the next five years, as shown in Exhibit III-3.

Equipment suppliers have always been strong in education and training, particularly for the use and exploitation of their own products. The same applies to software product vendors. But the emphasis within the software and services industry is on IS training, with IS education left on the whole to colleges, schools and disciplines other than IS (e.g., manufacturing management). Training relates to understanding a product or service (e.g., how to read the manual), while education relates to understanding a topic or subject.

Of all the areas listed in Exhibit III-1 under IS education and training, user training is the most neglected. Although users are carefully trained at the time of initial system implementation, there is commonly a general neglect of:

- User development training to maximise the IS use within their job function and enhance their job prospects

- Formal new/replacement user training when there is staff turnover or expansion of a function

This neglect results, in many cases, in a slow deterioration in use of the application, and a poorer return on investment than was originally predicted. Neglect of user training is itself often a result of lack of management attention. Too little thought is given by user management to maximising the benefit from past investment in the application solution. This is a lost opportunity for education and training vendors who could attract more repeat business.

EXHIBIT III-4

Professional Services Comparative Country Markets—Western Europe, 1990-1995

Subsector	Market Forecast ($ Millions)				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
France	4,850	5,800	6,950	20	14,500
Germany	2,200	2,650	3,150	18	6,100
United Kingdom	2,750	3,200	3,800	19	7,800
Italy	1,850	2,250	2,700	20	5,600
Sweden	475	555	665	19	1,350
Denmark	325	385	455	18	885
Norway	255	295	345	17	660
Finland	260	310	370	20	760
Netherlands	1,050	1,250	1,450	19	2,900
Belgium	510	610	735	19	1,500
Switzerland	400	465	565	20	1,150
Austria	195	230	270	19	535
Spain	445	545	675	24	1,600
Rest of Europe	125	155	190	21	410
Total (rounded)	15,700	18,700	22,300	20	45,700

EXHIBIT III-5

Professional Services Market, Western Europe Distribution by Major Region, 1990

Netherlands $1.2 B (6%)

Rest of Europe $2.2 B (12%)

France $5.8 B (31%)

Scandinavia $1.5 B (8%)

Italy $2.2 B (12%)

U.K. $3.2 B (17%)

Germany $2.6 B (14%)

1990 Total Western European Market = $18.7 Billion
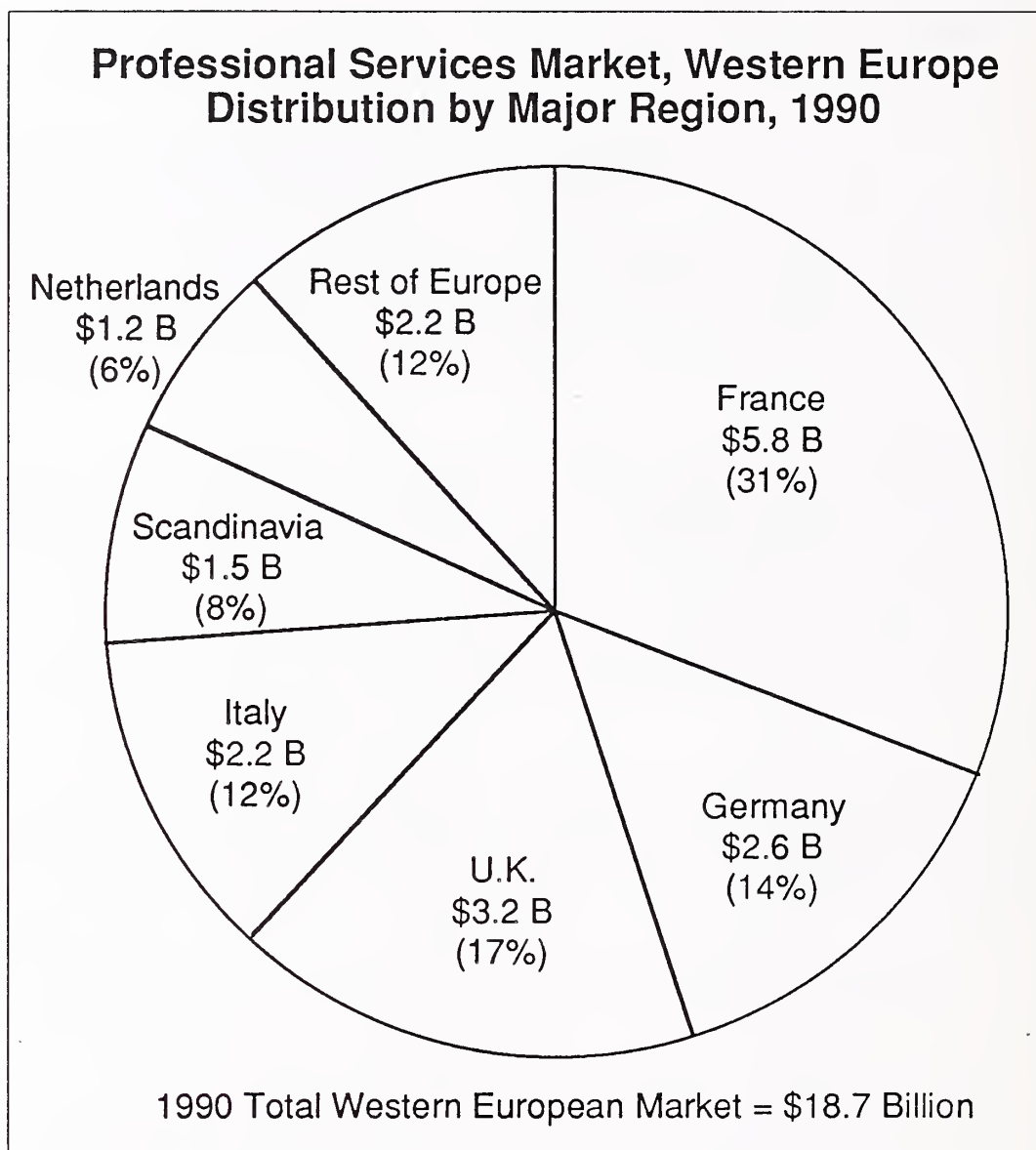
The professional services market varies significantly from country to country around Europe. Exhibit III-5 shows the split between the major geographic areas.

The market in France is equivalent to that of Germany and the United Kingdom combined. France has had the benefit of nearly two decades of very strong professional services development. Many companies which were originally spin-off DP departments from large commercial or industrial groups have established their total independence over the years. In contrast, this trend has been more limited in the U.K. and is only now being considered more seriously by large companies in Germany.

EXHIBIT III-6

Professional Services—Market Forces

Growth Drivers	Growth Inhibitors
• Rising board-level awareness	• Lower client budgets
• Growing project size/complexity	• Need for quality improvements
• Improved quality and standards	• High staff training costs
• New software technologies	• Growing popularity of packages
• Client's staff shortages	

Exhibit III-6 lists the major driving forces in the professional services market in 1990. These are quantified in Chapter V. Overall the growth drivers identified by vendors match well the factors offered by users.

When INPUT researched user opinions on professional services, the top four reasons given by users for contracting out to professional services vendors were:

• More efficient use of resources
• The use of specialists unavailable in-house
• Greater flexibility in managing a varying workload
• Access to new technology

The same users identified their selection criteria for choosing a professional services vendor. Their criteria, in order of priority, were:

• Meeting original specifications and performance guarantees
• Demonstrable track record and reputation for similar projects
• Technological capability matching the client's requirements
• Competitive price offering value for money
• Financial stability and customer base

EXHIBIT III-7

Leading Vendors of Professional Services
Western Europe, 1989

Rank	Vendor	County of Origin	Estimated Revenues ($ Millions)	Market Share (Percent)
1	IBM	U.S.	785	5.0
2	Cap Gemini Sogeti	France	715	4.6
3	Finsiel	Italy	285	1.8
4	Sema	France	250	1.6
5	Andersen Consulting	U.S.	240	1.5
6	Bull	France	240	1.5
7	Olivetti	Italy	220	1.4
8	Unisys	U.S.	190	1.2
9	Digital	U.S.	160	1.0
10	Volmac	Netherlands	155	1.0
11	CISI	France	145	0.9
12=	ICL	U.K.	140	0.9
12=	Tietotehdas	Finland	140	0.9
12=	SD-Scicon	U.K.	140	0.9
15	AB Programator	Sweden	130	0.8
16	Gentronix	Netherlands	100	0.6
17	Siemens	Germany	95	0.6
18	Raet	Netherlands	90	0.6
19	Sligos	France	85	0.5
20	Logica	U.K.	80	0.5
21=	Database Informatica	Italy	75	0.5
21=	Sopra	France	75	0.5
23=	Oracle	U.S.	70	0.4
23=	Computer Associates	U.S.	70	0.4
23=	Concept	France	70	0.4
26=	CMG (Computer Mgt)	U.K.	65	0.4
26=	Dataid	France	65	0.4
26=	Datev	Netherlands	65	0.4
26=	Reuters	U.K.	65	0.4
30	NCR	U.S.	60	0.4
	Others		10,625	67.7
	Total		15,690	100.0

EXHIBIT III-8

Leading Vendors' Professional Services Revenues by Company Nationality

Germany
2%

Scandinavia

6%

Netherlands
8%

U.K.
10%

France
33%

Italy
12%

U.S.
29%

Total = $5.0 billion in 1989
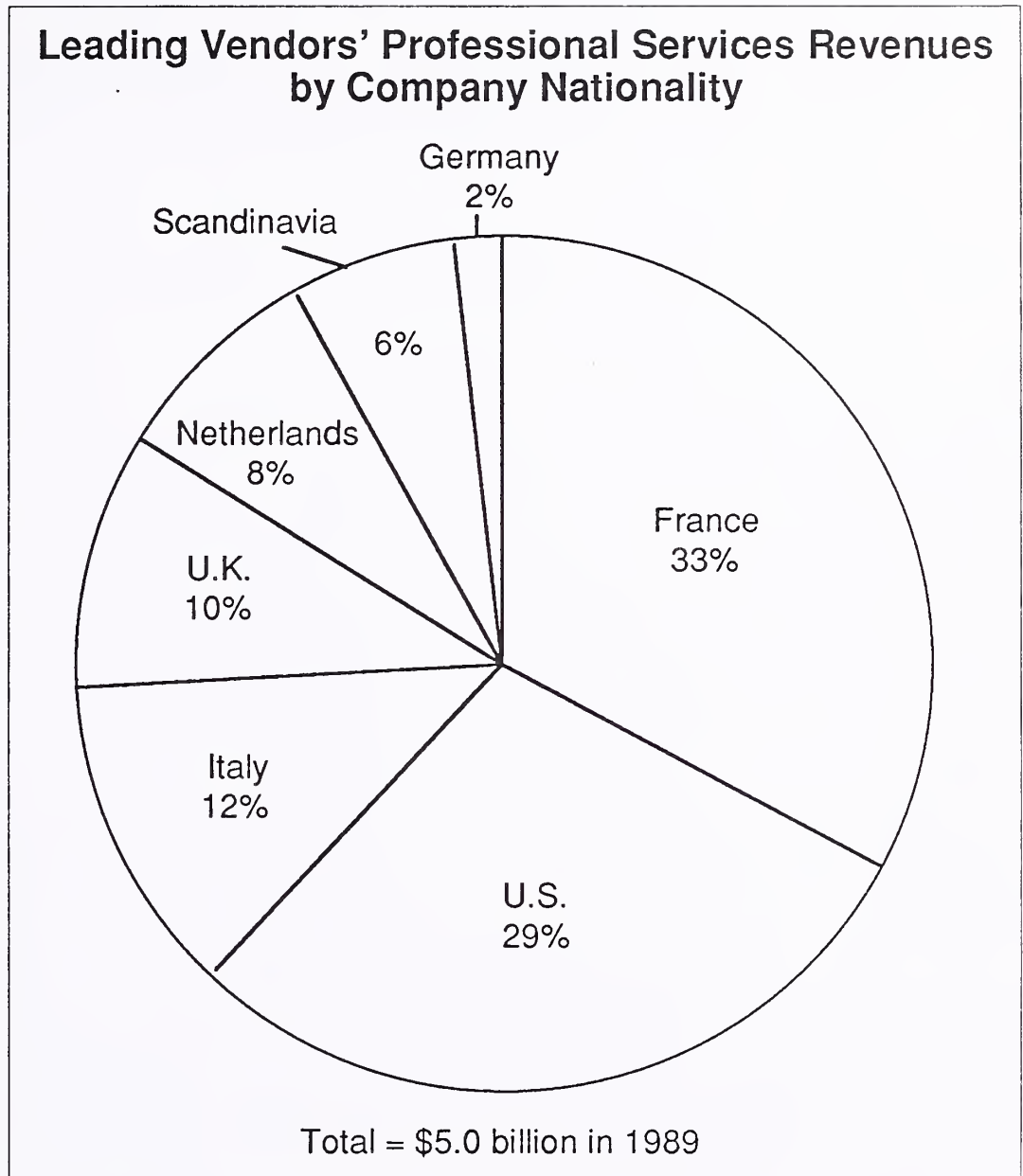
The leading 30 professional services vendors, accounting for $5.0 billion in revenues in 1989, are analysed by country of origin in Exhibit III-8.

Exhibits III-7 and III-8 show clearly the commanding position of the French professional services companies in Europe with one-third of the Top 30 vendors originating in France. Cap Gemini Sogeti is the leading independent vendor by far, and its acquisition of 65% of Hoskyns has given it its first major share of the U.K. market.

U.S. vendors also have a large share. As in most software and services markets, IBM is leader, not only through sheer size, but also because it

has made strenuous efforts to develop its professional services business and unbundle it from pre-sales support (systems engineering) and maintenance activities (customer engineering). Similarly, the other major equipment vendors appear to be following IBM's lead. Andersen Consulting, which grew 42% last year in Europe, has also had its attributable revenues revised upward by INPUT and reached the number five slot.

IV
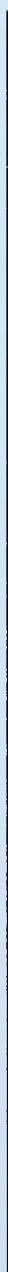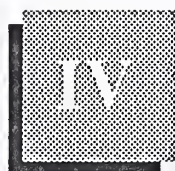
Country Markets

Country Markets

A

France

France, at 25% of the whole, has always been the largest market in Europe for software and services. The long history of strong professional services business means, in turn, that its professional services sector is by far the largest, with 38% of the total French software and services market and 31% of the total European professional services sector. INPUT estimates its size in 1990 was FF36 billion ($5.8 billion) and forecasts it will grow to FF89 billion ($14.5 billion) by 1995. The forecast for each segment of the professional services market in France is summarised in Exhibit IV-1 and shown in full in Appendixes C and D in full, which also contain forecasts for all the other countries.

EXHIBIT IV-1

Professional Services Market Forecast, 1990-1995
France

Subsector	FF Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	3,295	3,950	4,780	20	9,850
Custom Software Development	24,020	28,800	34,400	20	71,400
Education and Training	2,475	3,000	3,700	22	8,150
Total	29,790	35,750	42,880	20	89,400

Strong demand from the defence, telecommunications and finance sectors in particular has encouraged the growth of many substantial professional services companies in France. This strength is reflected also in the list of leading vendors in Exhibit IV-2. In fact, 12 of the top 20 vendors are French. France has a higher proportion of leading vendors than any other European country. The top 10 vendors represent some 24% of the professional services market in France.

French vendors are also strong in most other European countries. Cap Gemini Sogeti has corrected its past minor presence in the U.K. market by taking a majority share in Hoskyns. It has also increased its shareholding in Sema, though denying any predatory ambitions. Concept and Sligos have also been particularly active in strengthening their positions both outside and within France with further acquisitions.

EXHIBIT IV-2

Leading Vendors, 1989 Professional Services France

Rank	Vendor	Market Share (Percent)	Estimated Revenues (FF Millions)
1	Cap Gemini Sogeti	8.1	2,400
2	IBM	2.9	870
3	Bull	2.6	760
4	CISI	2.2	650
5	Sema	1.8	550
6	Sligos	1.7	510
7	Sopra	1.5	450
8	Dataid	1.3	400
9	SG2	1.0	290
10	Andersen Consulting	0.9	260
	Others	76.0	22,650
	Total	100.0	29,790

B

Germany

Germany is unusual in Europe as a country where packaged software and services is more important than custom software (Switzerland, Austria, Norway and Denmark are similar, but smaller). This culture favours turnkey systems and applications software products much more than professional services. INPUT estimates the size of the German professional services market in 1990 was DM4.8 billion ($2.6 billion) and forecasts it will grow to DM11.0 billion ($6.1 billion) by 1995. The forecast for each segment of the professional services market in Germany is summarised in Exhibit IV-3.

EXHIBIT IV-3

Professional Services Market Forecast, 1990-1995 Germany

Subsector	DM Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	495	590	715	19	1,400
Custom Software Development	2,820	3,330	4,000	18	7,600
Education and Training	705	840	1,020	19	2,000
Total	4,020	4,760	5,735	18	11,000

Germany is very fragmented as a market. It has few large and many small professional services companies. In-house development of custom software is much more prevalent than elsewhere in Europe. The leading vendors listed in Exhibit IV-4 together hold a 23% market share. Only six of the top 20 vendors are of German origin.

Siemens' absorption of Nixdorf will give SNI greater market penetration, but overall its professional services revenues are expected to take second place to turnkey business based on new generations of software products. SAP is experiencing high revenue growth—mainly outside its home market—with its professional services revenues, resulting primarily from packaged software sales rather than large custom development projects. SD-Scicon sold its loss-making German subsidiary to Cap Gemini Sogeti in 1990.

EXHIBIT IV-4

Leading Vendors, 1989 Professional Services Germany

Rank	Vendor	Market Share (Percent)	Estimated Revenues (DM Millions)
1	IBM	7.7	310
2	Siemens	3.2	130
3	EDV Studio Ploenzke	2.6	105
4	Cap Gemini Sogeti	2.1	85
5	SAP	1.7	70
6	Softlab	1.4	55
7	SD-Scicon	1.2	50
8	Digital	1.1	45
9	Unisys	1.0	40
10	Andersen Consulting	0.9	35
	Others	77.0	3,095
	Total	100.0	4,020

C

United Kingdom

The U.K. is the second largest professional services market in Europe, though considerably smaller than France. The U.K. is especially strong in training and consultancy. INPUT estimates the size of the U.K. professional services market in 1990 was £2.0 billion ($3.2 billion) and forecasts it will grow to £4.9 billion ($7.8 billion) by 1995. The forecast for each subsector of the professional services market in the U.K. is summarised in Exhibit IV-5.

EXHIBIT IV-5

Professional Services Market Forecast, 1990-1995
United Kingdom

Subsector	£ Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	245	300	370	24	890
Custom Software Development	1,310	1,510	1,750	18	3,390
Education and Training	180	220	270	23	630
Total	1,735	2,030	2,390	19	4,910

The ten leading vendors listed in Exhibit IV-6 hold a 27% market share and eight out of the top 20 vendors are of U.K. nationality. Andersen Consulting has experienced strong growth both in the U.K. and elsewhere in Europe at the same time as some of its competitors are beginning to struggle. The consulting and accounting companies have achieved a comparatively strong position in the U.K.'s professional services sector.

The market in the U.K. is suffering from recessionary pressures as clients delay decisions on IS expenditures. Removing the expected inflation rate of 7% reveals a real growth forecast for 1990 to 1991 of just over 10% per annum. With many companies looking for productivity improvements in excess of this figure, there are signs that in the short term, at least, many vendors will continue to shed staff.

EXHIBIT IV-6

Leading Vendors, 1989 Professional Services
United Kingdom

Rank	Vendor	Market Share (Percent)	Estimated Revenues (£ Millions)
1	IBM	4.6	80
2	ICL	4.3	75
3	Sema	4.0	70
4	SD-Scicon	2.6	45
5	Andersen Consulting	2.3	40
6	Logica	2.0	35
7=	AT&T Istel	1.7	30
7=	Computer People	1.7	30
7=	Coopers & Lybrand	1.7	30
7=	Digital	1.7	30
	Others	73.2	1,270
	Total	100.0	1,735

D

Italy

Italy is an important market for custom software. The state dominates many large companies both in the client and vendor bases. If there is a major liberalisation of the Italian market, there could be a reduction in patronage and public procurement of public companies. A trend to turnkey and software products is likely to follow as foreign vendors import their solutions. INPUT estimates the size of the Italian professional services market in 1990 was Lira 3,000 billion ($2.2 billion) and forecasts it will grow to Lira 7,500 billion ($5.6 billion) by 1995. The forecast for each subsector in Italy is summarised in Exhibit IV-7.

The list of leading vendors in Exhibit IV-8 shows clearly that many French vendors have built up their share of the Italian market. These top 10 represent some 45% of the market. Six Italian vendors make the top 20 in professional services in Italy, but generally the list is a good mix of European and U.S. companies.

Finsiel is the main group created by the state through a spate of acquisitions over the past few years. Olivetti has given a lot of attention to building its software and services business, establishing separate subsidiaries for the purpose, but this build-up has not been enough to compensate for the losses in Olivetti's PC and minicomputer sales.

EXHIBIT IV-7

Professional Services Market Forecast, 1990-1995
Italy

Subsector	Lira Billions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	345	430	535	25	1,310
Custom Software Development	1,955	2,330	2,795	19	5,490
Education and Training	185	230	290	25	700
Total	2,485	2,990	3,620	20	7,500

EXHIBIT IV-8

Leading Vendors, 1989
Professional Services
Italy

Rank	Vendor	Market Share (Percent)	Estimated Revenues (Lira Billions)
1	Finsiel	15.3	380
2	Olivetti	8.0	200
3	IBM	6.8	170
4	Database Informatica	4.0	100
5	Cap Gemini Sogeti	2.4	60
6	Concept	2.2	55
7	Bull	2.0	50
8	Cerved	1.8	45
9	Andersen Consulting	1.6	40
10	Sipe	1.4	35
	Others	54.3	1,350
	Total	100.0	2,485

E

Other European Countries

The remaining European country forecasts are provided in Exhibits IV-9 to IV-21. Leading vendor market shares are given for Sweden, the Netherlands and Belgium.

1. Sweden

EXHIBIT IV-9

Professional Services Market Forecast, 1990-1995
Sweden

Subsector	SeK Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	390	470	575	22	1,280
Custom Software Development	2,200	2,570	3,050	18	5,890
Education and Training	435	520	630	21	1,350
Total	3,025	3,560	4,255	19	8,520

EXHIBIT IV-10

42

Leading Vendors, 1989 Professional Services
Sweden

Rank	Vendor	Market Share (Percent)	Estimated Revenues (SeK Millions)
1	AB Programator	27.1	820
2	Cap Gemini Sogeti	10.6	320
3	IBM	6.6	200
4	Tietotehdas	4.6	140
5	Kommunedata	4.3	130
6=	Conor Information	3.0	90
6=	Edebe Promotion	3.0	90
8	Unisys	1.8	55
9	Digital	1.7	50
10	Oracle	1.3	40
	Others	36.0	1,090
	Total	100.0	3,025

2. Denmark

EXHIBIT IV-11

Professional Services Market Forecast, 1990-1995
Denmark

Subsector	DK Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	325	405	495	23	1,140
Custom Software Development	1,855	2,190	2,560	17	4,800
Education and Training	95	115	140	21	300
Total	2,275	2,710	3,195	18	6,240

3. Norway

EXHIBIT IV-12

Professional Services Market Forecast, 1990-1995
Norway

Subsector	NK Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	250	295	350	19	705
Custom Software Development	1,400	1,620	1,900	17	3,550
Education and Training	90	105	125	19	255
Total	1,740	2,020	2,375	17	4,510

4. Finland

EXHIBIT IV-13

Professional Services Market Forecast, 1990-1995
Finland

Subsector	FM Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	160	200	240	22	530
Custom Software Development	875	1,040	1,240	19	2,490
Education and Training	60	70	80	21	180
Total		1,095	1,310	1,560	20	3,200

5. The Netherlands

EXHIBIT IV-14

Professional Services Market Forecast, 1990-1995
The Netherlands

Subsector	Dfl Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	275	340	420	24	990
Custom Software Development	1,650	1,900	2,220	17	4,190
Education and Training	235	290	350	23	800
Total	2,160	2,530	2,990	19	5,980

EXHIBIT IV-15

Leading Vendors, 1989 Professional Services
The Netherlands

Rank	Vendor	Market Share (Percent)	Estimated Revenues (Dfl Millions)
1	Volmac	13.0	280
2=	Cap Gemini Sogeti	9.3	200
2=	Gentronix	9.3	200
4	Raet	8.3	180
5	Datev	6.0	130
6	IBM	3.7	80
7	CMG (Computer Management Group)	3.0	65
8	SD-Scicon	2.1	45
9	Unisys	1.6	35
10	Computer Centrum Nederland	1.4	30
	Others	42.4	915
	Total	100.0	2,160

6. Belgium

EXHIBIT IV-16

Professional Services Market Forecast, 1990-1995
Belgium

Subsector	BF Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	2,690	3,340	4,150	25	10,000
Custom Software Development	15,260	18,000	21,500	18	41,000
Education and Training	1,540	1,900	2,300	22	5,200
Total	19,490	23,240	27,950	19	56,200

EXHIBIT IV-17

Leading Vendors, 1989 Professional Services
Belgium

Rank	Vendor	Market Share (Percent)	Estimated Revenues (BF Millions)
1	Cap Gemini Sogeti	5.2	1,020
2	IBM	3.8	750
3	CSC	2.9	570
4	Sema	2.8	540
5	Volmac	2.4	460
6=	Andersen Consulting	1.7	330
6=	Unisys	1.7	330
8	Bull	1.5	290
9	Reuters	1.0	200
10	Digital	0.9	180
	Others	76.0	14,820
	Total	100.0	19,490

MEROE

7. Switzerland

EXHIBIT IV-18

Professional Services Market Forecast, 1990-1995
Switzerland

Subsector	SF Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	80	95	120	22	260
Custom Software Development	440	510	610	19	1,200
Education and Training	120	140	180	23	400
Total	640	745	910	20	1,860

8. Austria

EXHIBIT IV-19

Professional Services Market Forecast, 1990-1995
Austria

Subsector	Sch Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	320	390	470	22	1,050
Custom Software Development	1,800	2,090	2,440	17	4,580
Education and Training	350	430	530	23	1,200
Total	2,470	2,910	3,440	19	6,830

9. Spain

EXHIBIT IV-20

Professional Services Market Forecast, 1990-1995
Spain

Subsector	Pta Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	7,250	9,060	11,400	26	28,800
Custom Software Development	38,800	47,300	58,200	23	133,000
Education and Training	5,600	7,000	8,820	26	22,200
Total	51,650	63,360	78,420	24	184,000

10. Rest of Europe

EXHIBIT IV-21

Professional Services Market Forecast, 1990-1995
Rest of Europe

Subsector	$ Millions				
	1989	1990	1991	1990-1995 CAGR (Percent)	1995
IS Consultancy	15	18	22	23	50
Custom Software Development	95	119	145	21	305
Education and Training	15	18	23	25	55
Total	125	155	190	21	410
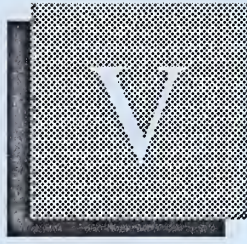
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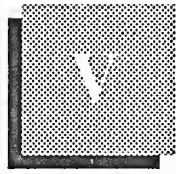
Vendor Issues

A
Software Maintenance

The vendor research programme for this report concentrated on issues related to the development of software maintenance business. The professional services industry has traditionally lived by helping clients to tackle *new* projects. As the installed base of software systems has grown, so has the challenge for IS departments of maintaining the vast array of increasingly complex systems.

EXHIBIT V-1

Software Maintenance— The Problems

- High business dependence
- Aging software tools
- Poor software documentation
- Lost skills
- Motivation of development staff
- Recruiting maintenance staff

Some of the problems which arise as active software ages are listed in Exhibit V-1. By definition, if software is still in use after several years then it is probably an integral part of the business operations. Seldom does such software not require maintenance activity to keep it in step with changing needs or to fix new-found problems.

The software tools originally used to create the applications can become part of the problem, either because they have been abandoned by the

vendor in favour of a new product, or because they have been enhanced and may have become incompatible with the old application. Both these issues require well-defined procedures to ensure continued compatibility between inter-dependent pieces of software.

Much software documentation, which may have seemed adequate at the time of writing, is found later to be too abbreviated to be understood by new staff (or the originator!). For smaller IS departments the loss of a key member of staff can mean a complete loss of skills required for the maintenance of essential software.

The status of staff used for software maintenance tends to be low compared to those used for new developments. In fact, in many organisations they are seen as being very different characters: developers are keen to innovate in the use of software and quick to move on to the latest technology; maintainers tend to be more thorough and methodical. Motivating developers to behave like maintainers is difficult. Recruiting maintainers requires a firm management commitment to the task of software maintenance rather than a fire-fighting approach to every problem.

A variety of reports have put the expenditure on software maintenance by IS departments at well over 50% of their annual people budgets. As discussed in last year's INPUT report, this represents a large opportunity for professional service and software product vendors. Exhibit V-2 lists some of the key areas.

EXHIBIT V-2

Software Maintenance— The Opportunities

- Re-engineering tools
- Reverse engineering tools
- Software conversion tools
- Systems software services
- Applications software services
- Formal maintenance methods

Re-engineering offers the opportunity to put existing applications through an analysis and documentation cycle, which—for example—identifies the structure of the programs, logical inconsistencies, and potential compilation difficulties. These can form the basis for improved maintenance quality, or a partial system re-write using this analysis as a specification. The results may also form the starting point for conversion to a completely new system. Reverse engineering tools usually aid the move from third to fourth generation languages, or from hierarchical to relational databases. Conversion tools minimise the amount of revision required by such upgrades, but often leave the maintenance of the original software just as difficult as it ever was.

There are three categories of service opportunity in software maintenance:

• Maintenance of systems software such as languages, databases, networking and operations. This is the most common service according to INPUT's research.

• Maintenance of applications software seems to be largely restricted at present to applications originating from the vendor. INPUT uncovered no cases where a service vendor had taken on the maintenance of a major application which had been developed independently by the client in-house.

• Formal methods for managing and implementing maintenance projects seem to have been supplied to clients on an ad-hoc basis rather than as part of a grand service strategy.

B

Vendor Approaches to Software Maintenance

Software maintenance is still a very small or non-existent part of most software and services vendor revenues in Europe. The next few pages discuss the responses of 20 vendors (to the questionnaire in Appendix B) on how they address this market sector.

The majority of vendors favoured running this type of business from a dedicated profit centre. Exhibit V-3 lists their responses in priority order. The answers indicate a strong preference for profit centres organised by industry sector, with resources being arranged contract by contract and situated as close to clients as possible.

Although re-organisation of software and services businesses along industry sector lines has been a trend for several years, it does not show up as clearly as expected as the preferred method for software maintenance services.

EXHIBIT V-3

Vendor Organisation Preferences for
Software Maintenance Services

No. of
Respondents
(20 maximum)

Category	Average Score	No. of Respondents
Dedicated team or profit centre	4.0	17
Within industry sector groups	3.2	19
Locally resourced contract by contract	3.0	19
Part of systems operations business	2.5	17
Centrally resourced contract by contract	2.4	14

Average Scores
(Range 1-5)*

Responses to the question: What is the best way to resource this business?

*1 = unimportant, 5 = very important.
Standard Error: 0.3

Exhibit V-4 lists in priority order the vendor response to questions on their sales methods. The most consistent message to come out was that software maintenance services need to be custom designed for each client. Software maintenance is such a broad area that it was felt impossible to offer a range of standard services, except as a marketing ploy to attract attention. In reality each client would require a custom-made set of services to match their unique circumstances.

EXHIBIT V-4

Vendor Selling Preferences for Software Maintenance Services

No. of
Respondents
(20 maximum)

Packaged customer by customer — 4.4 — 14

Packaged as a specific service — 2.2 — 17

Using specialised sales staff — 2.1 — 14

Special incentives for account managers — 2.0 — 16

Average Scores
(Range 1-5)*

Responses to the question: What is the best way to sell this service?

*1 = unimportant, 5 = very important.
Standard Error: 0.25

Although preferring profit centres, none would dedicate their sales people to selling maintenance services only. At this stage, most vendors offer the service as just one part of a whole range of products and services with which to win business. It also seems that no one is using software maintenance service to win new accounts. All respondents claim to offer it only to existing major customers. In many cases it was part of a total solution to a larger problem—for example, one company offered its client this service so that the client could release staff to work on another project in which the vendor had a stake. Another was maintaining the client's old software while implementing a new replacement system.

When introducing software maintenance as a new service, many vendors offered special incentives to staff to encourage sales and establish the business. In some cases these compensation packages reflected the full value of a contract lasting several years.

EXHIBIT V-5

Vendor Opinions on Profitability of Software Maintenance Services

No. of
Respondents
(20 maximum)

How profitable now? — 3.5 — 13

How profitable in future? — 3.8 — 13

Average Scores
(Range 1-5)*

*1 = unimportant, 5 = very important.
Standard Error: 0.1
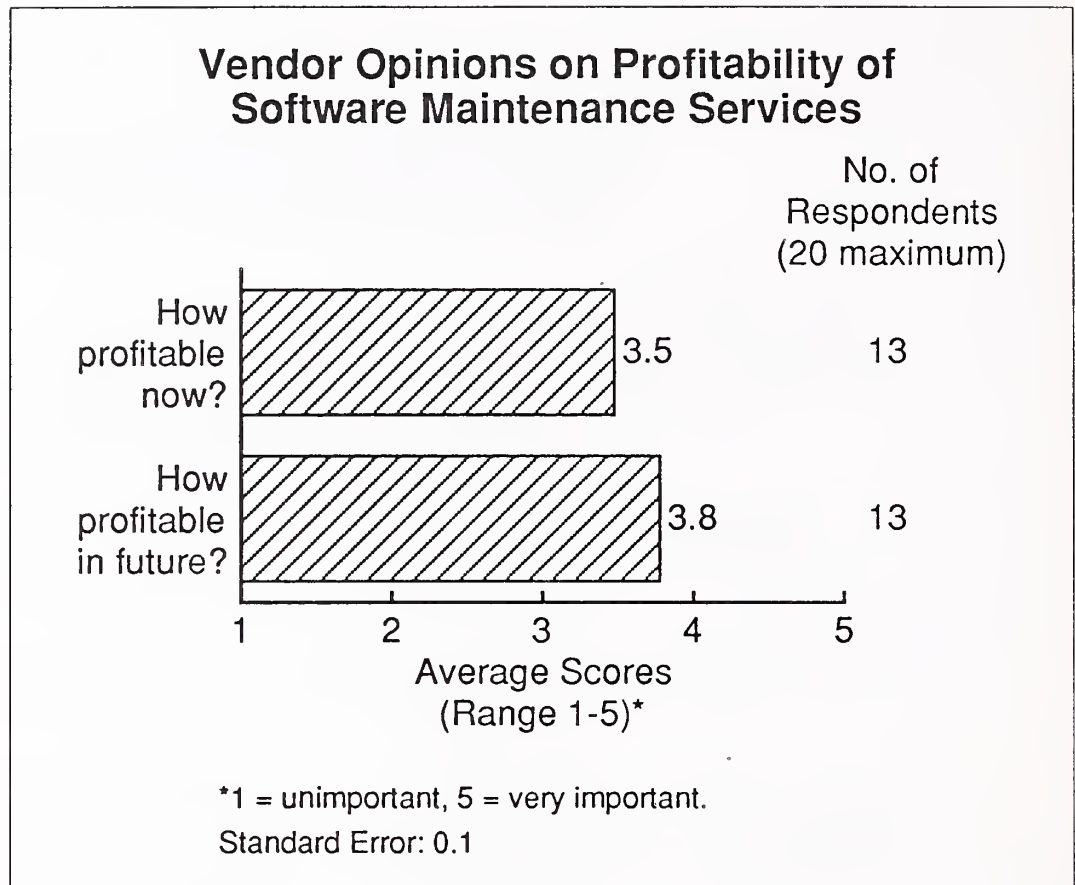
As illustrated in Exhibit V-5, all vendors felt that the service was a good contributor to profit, with several seeing this position improving further over the next few years. Most of those unable to comment on this question did not have access to the relevant information at this level of detail within their business.

Overall, the European software maintenance opportunity looks relatively untapped. Technically this market segment is only now beginning to be attractive as vendors develop some innovative software tools and methodologies for managing the maintenance problems, helping clients maximise the return on their past software investments. Financially, the market looks particularly attractive, with clients and vendors as willing partners in the creation of profitable business, and in-house budgets heavily biased towards support maintenance and evolution of existing systems.

C

Professional Services Market Trends

The real growth of the professional services sector has been reduced by recent downturns in IS spending growth generally. The market is also becoming more competitive. Its relatively high growth rate is still attracting a wide range of vendors into the market who have not previously treated professional services as a main line of business:

- Equipment vendors who are looking for greater account control and more margin contribution as hardware prices fall;

- Management consultancies that are seeing the IT proportion of their business grow much more rapidly than any other sector;

- Software product companies that are introducing professional services in order to develop more major account business and ensure customer loyalty in the longer term.

- Telecommunications vendors who are developing similar strategies to spread their influence in the market.

- Staff agencies that have thrived on the continued difficulties of recruiting and retaining good IS staff.

Vendors were questioned about the factors which are either stimulating business growth or inhibiting it. Exhibit V-6 illustrates the positive responses in priority order. The growing size and complexity of IS projects is clearly the primary driving force in the growth of professional services business. Most users have difficulty affording the mix of necessary knowledge and skills required for implementing modern information systems. This corresponds directly with the vendors' view that complexity is the most significant driver of growth.

Ninety percent of respondents were very positive about the gains they were making by enforcing the use of standards and methodologies among their own staff. Many had found that their clients were also keen to adopt the same procedures for their own use. Particular mention was made of the importance of project management procedures and change control procedures.

The messages on quality which have been widely discussed in the last two years are now being reflected in the marketing stance of vendors interviewed. The vendors were not questioned on their ability to measure quality improvements. A "quality" culture is now seen as an essential part of a vendor's competitive armoury. Thirty percent of those interviewed were concerned that they had not made sufficient progress on actual quality improvement, though their clients may be unaware of this.

EXHIBIT V-6

Professional Services Vendor Opinions
Growth Drivers

	Average Score	No. of Respondents (20 maximum)
Growing size and complexity of projects	4.4	14
Standards and methodologies	4.0	18
Quality improvements	3.8	18
Modern software tools	3.7	19
High staff training costs	3.7	8
Shortage of skilled staff	3.7	14
Better, richer application packages	3.6	5
Modern software languages/databases	3.6	20
Kernel or blueprint applications	3.5	8
Competitors shortening timescales	3.5	6

Average Scores
(Range 1-5)*

Responses to the question: How important are these factors in increasing professional services growth rates?

*1 = unimportant, 5 = very important.
Standard Error: 0.2

The introduction of better, richer application packages was seen as creating more professional services opportunity by only 30% of respondents. However, as shown in Exhibit V-7, 45% saw packages as a threat to professional services growth.

Eight out of twenty respondents expect their own use of kernel or blueprint packages to stimulate more professional services business. They all saw this as a way of improving staff productivity, rather than as a way in which clients could develop their own solutions more rapidly.

In Exhibit V-7, the most obvious inhibitor of professional services growth appears at the top of the list—reducing client budgets. Seventy-five percent of respondents admitted to experiencing reduced revenues from a significant number of clients.

Nearly half the respondents felt that the high cost of training their staff was limiting their professional services business growth. Only one respondent quoted a figure—7% of turnover—for staff training costs. This relatively high figure was quoted as a reason for the company's success in the market.

Competition from other vendors was not seen by many respondents as a very significant threat. Only half ranked it at all, and those that did scored it low. This reflects the very complex process in which users select a supplier for a particular professional services task. Demonstrable ability to do the job is generally far more important than beating a competitor on price. (In the public sector, ability and price are of similar importance.)

EXHIBIT V-7

Professional Services Vendor Opinions
Growth Inhibitors

No. of
Respondents
(20 maximum)

Factor	Average Score	No. of Respondents
Lower client budgets	3.5	15
Quality improvements	3.3	6
High staff training costs	3.1	9
Modern software languages/databases	3.0	2
Better, richer application packages	2.7	9
Competitors shortening timescales	2.5	10
Lower competitor prices	2.4	9
Kernel or blueprint applications	1.8	7

Average Scores
(Range 1-5)*
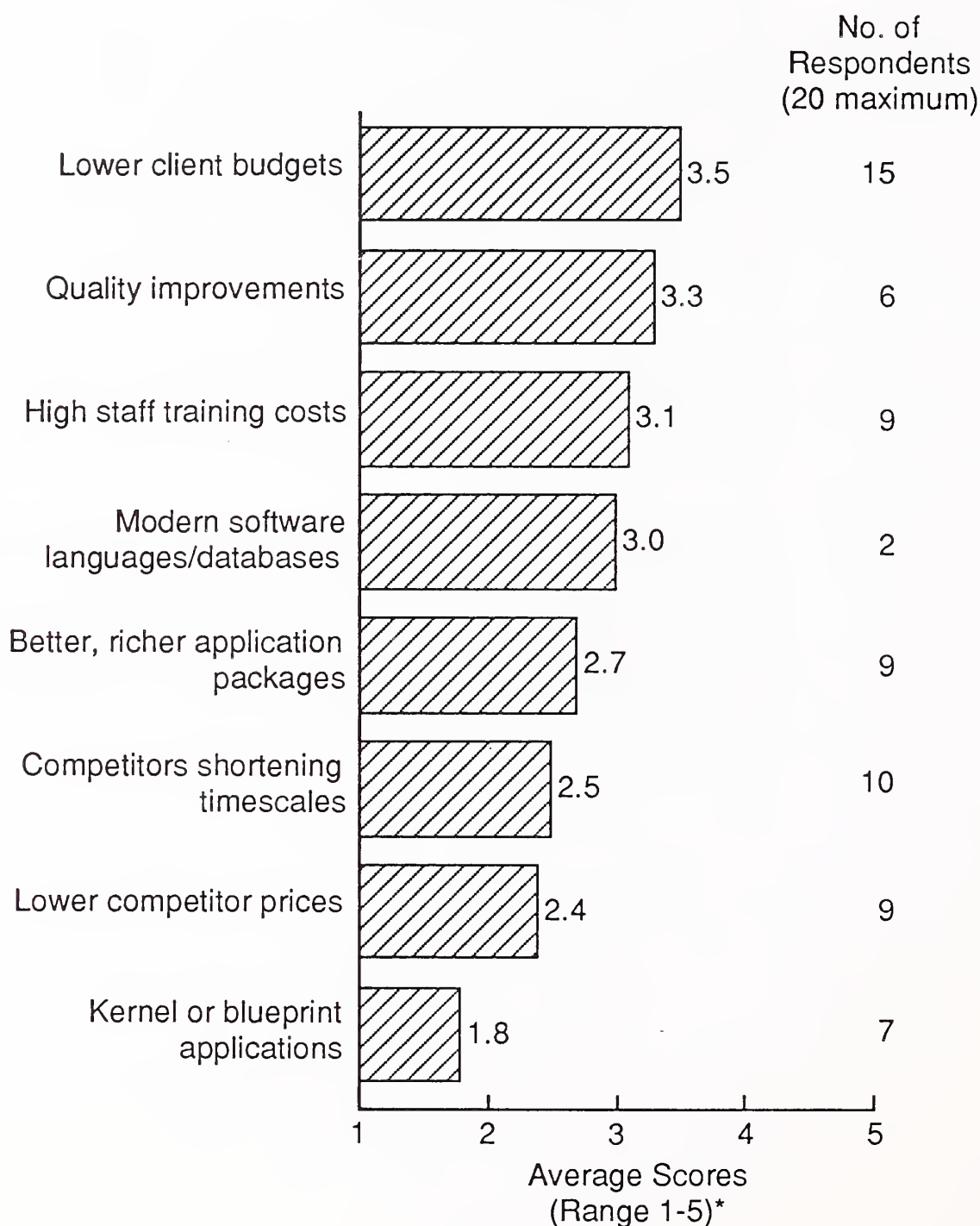
Responses to the question: How important are these factors in reducing professional services growth rates?

*1 = unimportant, 5 = very important.
Standard Error: 0.2

D

Strategic Directions

As competition between professional services vendors increases and real growth rates slow, it becomes more important for vendors to have a clear position in the market. The threats to traditional vendors from management consultancies, the major equipment manufacturers and the larger software product vendors require reaction and change. The implications of new platform technologies, methodologies and the resulting powerful applications software portfolios must be carefully considered.

Assuming that there is already a strong industry sector orientation to a vendor's professional services business, there are four natural elements of business growth strategy to consider, as listed in Exhibit V-8.

EXHIBIT V-8

Vendor Growth Strategies

- New technology, old services

- New services, old clients

- Old services, new clients

- New services, new clients

The first stage of development strategy should address the problem of how to remain competitive by improving productivity and performance. Vendors should maximise the use of new tools in order to remain competitive in professional services in terms of quality, costs and completion timescales. Clients must be able to see a continuous programme of improvement if they are to stay loyal and not succumb to the sales efforts of attractive professional services competitors. This requires imposition of software standards and procedures for both development and management of projects, a heavy continuous training programme for staff, and full management attention given to customers and the service they require.

The second element of strategy must be how to win more business from existing client accounts and take a larger share of their budget. Vendors should expand their portfolio of services in order to win more business from existing customers—for example, by considering what software maintenance services could be packaged on a customer-by-customer basis. Careful assessment should be made of the types of new services clients would value; these could be the subject of test marketing.

Thirdly, and requiring higher investment and higher risk, any strategy must consider how to better position the company to win more new name business, but using existing resources and familiar services. In many cases this will be best managed within industry sector or geographic groupings, since past experience and deep, demonstrable understanding of niche markets is the key to success in winning new account business.

Finally the strategy should assess the opportunities for building entirely new business. Inevitably, such a strategy requires high investment and poses the highest risk. The risk might be lowered by an acquisition strategy or a partnership strategy. There are many successful examples of both strategies in Europe, as well as no small number of failures. Moving up-market and gaining entry through a management consultancy to boardrooms of potential new clients is one of the most attractive options. However, it appears that moving in the opposite direction—diversifying down the demand chain from consultancy to software development and implementation—is the more successful manoeuvre at present.

Whatever the final strategic mix of business moves, the industry can look forward to a continuing period of consolidations, take-overs and partnerships in the fight for maximum profit and market share. Fuelled by the unchanged trend to outsource many IS activities, the competition looks worth winning. But who knows when the groundswell of self-sufficient IS users will begin to counteract the slow demise of the large IS departments and the good fortunes of the professional services vendors.

Appendixes
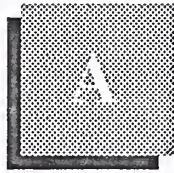
Definition of Terms

A

Overall Definitions and Analytical Framework

Information services - computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Processing of specific applications using vendor-provided systems (called processing services)

- A combination of hardware, packaged software and associated support services which will meet a specific application processing need (called turnkey systems)

- Packaged software (called software products)

- People services that support users in developing and operating their own information systems (called professional services)

- Bundled combinations of products and services where the vendor assumes responsibility for the development of a custom solution to an information system problem (called systems integration)

- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called systems operations)

- Services associated with the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange, on-line data bases, on-line news and data feeds, videotex, etc. (called network services)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is bundled as part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., EDI or VAN services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

All information services market forecasts are estimates of user expenditures for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

• Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)

• Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Market sectors or markets, are groupings or categories of the users who purchase information services. There are three types of user markets:

• *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc.

• *Functional Application* markets, such as Human Resources, Accounting, etc. These are also called "Cross-Industry" markets.

• *Generic* markets, which are neither industry- nor application-specific, such as the market for systems software.

Specific market sectors used by INPUT are defined in Section D, below.

Captive information services user expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive information services user expenditures are expenditures that go to vendors which have a different parent corporation than the user. It is these expenditures which constitute the information services market.

Delivery modes are defined as specific products and services that satisfy a given user need. While *market sectors* specify *who* the buyer is, *delivery modes* specify *what* the user is buying.

Of the eight delivery modes defined by INPUT, five are considered primary products or services:

- Processing Services
- Network Services
- Professional Services
- Applications Software Products
- Systems Software Products

The remaining three delivery modes represent combinations of these products and services, bundled together with equipment, management and/or other services:

- Turnkey Systems
- Systems Operations
- Systems Integration

Section B describes the delivery modes and their structure in more detail.

Outsourcing is defined as the contracting of information systems (IS) functions to outside vendors. Outsourcing should be viewed as the opposite of insourcing: anything that IS management has considered feasible to do internally (e.g., data center operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

IS has always bought systems software, as it is infeasible for companies to develop it internally. However, all other delivery modes represent functions or products that IS management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of a make-or-buy decision, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources.

B
Industry Structure and Delivery Modes

1. Service Categories

The following exhibit presents the structure of the information services industry. Several of the delivery modes can be grouped into higher-level service categories, based on the kind of problem the user needs to solve. These categories are:

- Business Application Solutions (BAS) - prepackaged or standard solutions to common business applications. These applications can be either industry-specific (e.g., mortgage loan processing for a bank), cross-industry (e.g., payroll processing), or generic (e.g., utility timesharing). In general, BAS services involve minimal customization by the vendor, and allow the user to handle a specific business application without having to develop or acquire a custom system or system resources. The following delivery modes are included under BAS:

  - Processing Services
  - Applications Software Products
  - Turnkey Systems

- Systems Management Services (SMS) - services which assist users in developing systems or operating/managing the information systems function. Two key elements of SMS are the customization of the service to each individual user and/or project, and the potential for the vendor to assume significant responsibility for management of at least a portion of the user's information systems function. The following delivery modes are included under SMS:

  - Systems Operations
  - Systems Integration

Each of the remaining three delivery modes represents a separate service category:

- Professional Services
- Network Services
- System Software Products

Note: These service categories are a new concept introduced in the 1990 Market Analysis Program. They are purely an aggregation of lower level delivery mode data. They do not change the underlying delivery modes or industry structure.

2. Software Products

There are many similarities between the applications and systems software delivery modes. Both involve user purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if bundled in the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

• Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. These products include:

- *Systems Control Products* - Software programs that function during application program execution to manage computer system resources and control the execution of the application program. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.

- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.

- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids. Also included are system utilities (e.g., sorts) which are directly invoked by an applications program.

• Application Software Products

- *Industry-Specific Application Software Products* - Software products that perform functions related to solving business or organizational needs unique to a specific vertical market and sold to that market only. Examples include demand deposit accounting, MRPII, medical recordkeeping, automobile dealer parts inventory, etc.

- *Cross-Industry Application Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Applications include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

3. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single system developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually application software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services.

Turnkey systems are divided into two categories.

- *Industry-Specific Systems* - systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems.

- *Cross-Industry Systems* - systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, or personnel management systems.

4. Processing Services

This category includes transaction processing, utility processing, and other processing services.

- *Transaction Processing:* - Client uses vendor-provided information systems—including hardware, software and/or data networks—at vendor site or customer site, to process transactions and update client data bases. Transactions may be entered in one of four modes:

  - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation: the user is on-line to the programs/files stored on the vendor's system.

  - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.

  - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through communications networks to the vendor's central systems for processing other parts of the application.

  - *Carry-in Batch* - Where users physically deliver work to a processing services vendor.

- *Utility Processing:* Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and or data bases, enabling clients to develop their own programs or process data on the vendor's system.

- *Other Processing Services:* Vendor provides services—usually at vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

5. Systems Operations

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes:

- *Professional Services:* The vendor provides personnel to operate client-supplied equipment. Prior to 1990, this was a submode of the professional services delivery mode.

- *Processing Services:* The vendor provides personnel, equipment and (optionally) facilities. Prior to 1990, this was a submode of the processing services delivery mode.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the user's information systems (equipment, networks, systems and/or application software), either at the client's site or the vendor's site. Systems operations can also be referred to as "resource management" or "facilities management."

There are two general levels of systems operations:

- *Platform/network operations* - where the vendor operates the computer system and/or network without taking responsibility for the applications

- *Application operations* - where the vendor takes responsibility for the complete system, including equipment, associated telecommunications networks, and applications software

Note: Systems operations is a new delivery mode introduced in the 1990 Market Analysis Program - Europe. It was created by taking the systems operations submode out of both processing services and professional services. No other change has been made to the delivery mode definitions, and the total forecast expenditures for these three delivery modes are identical to the total forecast expenditures of the two original modes before the breakout of systems operations.

6. Systems Integration (SI)

Systems integration is a business offering that provides a complete solution to an information system, networking or automation requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- System component selection, modification, integration and customization
- Custom software design and development
- Custom hardware design and development
- Systems implementation, including testing, conversion and post-implementation evaluation and tuning
- Life cycle support, including
  - System documentation and user training
  - Systems operations during development
  - Systems maintenance
- Financing

7. Professional Services

This category includes consulting, education and training, and software development.

- *Consulting:* Services include management consulting (related to information systems), information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of information systems, including equipment, software, networks and systems operations.

- *Education and Training:* Products and services related to information systems and services for the professional and the end user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

8. Network Services

Network services typically include a wide variety of network-based functions and operations. Their common thread is that most of these functions could not be performed without network involvement. Network services is divided into two major segments: *Electronic Information Services,* which involve selling information to the user, and *Network*

Applications, which involve providing some form of enhanced transport service in support of a user's information processing needs.

- *Electronic Information Services*

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers. Users typically inquire into and extract information from the data bases. Although users may load extracted data into their own computer systems, the electronic information vendor provides no data processing or manipulation capability and the users cannot update the vendor's data bases.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- *News Services* - Unstructured, primarily textual information on people, companies, events, etc.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

- *Network Applications*

- *Value-Added Network Services (VAN Services)* - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

INPUT's market definition covers VAN services only, but includes the VAN revenues of all types of carriers.

- *Electronic Data Interchange (EDI)* - Application-to-application exchange of standardized business documents between trade partners or facilitators. This exchange is commonly performed using VAN services. Specialized translation software is typically employed to convert data from organizations' internal file formats to EDI interchange standards; this software may be provided as part of the VAN service, or may be resident on the organization's own computers.

- *Electronic Information Exchange (EIE)* - Also known as Electronic Mail (E-Mail), EIE involves the transmission of messages across an electronic network managed by a services vendor, including facsimile transmission (FAX), voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

- *Other Network Services* - This segment contains videotex and pure network management services. Videotex is actually more a delivery mode than an application. Its prime focus is on the individual as a consumer or in business. These services provide interactive access to data bases and offer the inquirer the capability to send as well as receive information for such purposes as home shopping, home banking, travel reservations, and more.

Network management services included here must involve the vendor's network and network management systems as well as people. People-only services, or services that involve the management of networks as part of the broader task of managing a user's information processing functions, are included in systems operations.

C

Vendor Revenue and User Expenditure Conversion	The size of the information services market may be viewed from two perspectives: vendor (producer) revenues, and user expenditures. While the primary data for INPUT's research is vendor interviews, INPUT defines and forecasts the information services market in terms of end-user expenditures. End-user expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels, such as original equipment manufacturers (OEMs), retailers and distributors. The focus on end-user expenditure also eliminates the double counting of revenues which would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., BusinessLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some significant areas of difference. Many microcomputer software products, for example, are marketed

through indirect distribution channels. To capture the valued added through these indirect distribution channels, adjustment factors which incorporate industry discount ratios are used to convert estimated information services vendor revenues to end-user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. And turnkey vendors incorporate purchased software into the systems they sell to end users.
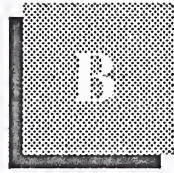
Vendor Questionnaire

Introduction

INPUT is a market planning consultancy, specialising in the software and services industries.

The purpose of my call is to identify the manager responsible for market planning and strategy of your Professional Services activities - areas such as IT consultancy, custom software development, software maintenance and education and training.

Are you the right person? Who else then?

Can you spare some time to answer a few questions on the critical issues facing your business which relate to professional services? Please confirm your name, position and address for me.

(We will be sending you a copy of the Executive Summary of the report as a thank you for your contribution).

Background Information

1.   Could you indicate the size of your organisation - number of staff:_____

2.   Total Annual Turnover in Europe:_____ Year:_____

3.   Proportion from Software and Services:_____

Can you tell me what proportion of your business fits the following categories of software and services defined by us at INPUT.

		Proportion (Percent)	Growth Rates (Percent)		Importance Rank (1-5)
			Current	Future	
4.	Professional Services (e.g., consulting)	_____	_____	_____	_____
5.	Applications Software	_____	_____	_____	_____
6.	Turnkey Systems	_____	_____	_____	_____
7.	Processing Services	_____	_____	_____	_____
8.	Network Applications (EDI, EFT)	_____	_____	_____	_____
9.	Education and Training	_____	_____	_____	_____
10.	Electronic Information	_____	_____	_____	_____
11.	Systems Software	_____	_____	_____	_____
12.	Customer Services	_____	_____	_____	_____
13.	Systems Operations	_____	_____	_____	_____
14.	Systems Integration	_____	_____	_____	_____

15. What are your current and future growth expectations in these sectors? (Complete next two columns above).

16. On a scale of 1 (unimportant) to 5 (vital) how would you rank each type of business in importance to your future? (Complete final column)

Professional Services

17. For Professional Services what is your main Western European Market (M), and other European Markets (O).

Swi Aus Bel Ned Fra Ger UK Ita Yug Gre Spa Por Nor Dk Swe Fin

18. Which of these do you expect to contribute most to your profits?

---

19. What do you see as the most important opportunities or challenging issues facing your professional services business over the next few years? (Economic, Business, Technology, Applications, Outsourcing, etc.)

_____

_____

20. What are the major threats which might limit your success in Professional Services?

Internal   External

_____   _____

_____   _____

Software Maintenance

Many users experience a heavy software maintenance work load. Some vendors are now contracting to take on this work, freeing the client to use his own staff on new developments. Do you offer a service to handle your clients' software maintenance?

____Yes   ____No   ____Plan to

If YES or PLAN TO then:

21. What is the best way to resource this business?   Score 1 to 5

22. Dedicated team/profit centre   1 2 3 4 5

23. Part of systems operations (e.g., FM) business   1 2 3 4 5

24. Within industry sector groups   1 2 3 4 5

25. Locally resourced contract by contract   1 2 3 4 5

26. Centrally resourced contract by contract   1 2 3 4 5

27. Other_____   1 2 3 4 5

What is the best way to sell this service?   1 2 3 4 5

28.   Packaged as a specific service   1 2 3 4 5

29.   Packaged customer by customer   1 2 3 4 5

30.   Specialised sales staff   1 2 3 4 5

31.   Special incentives for account managers   1 2 3 4 5

32.   Other_____   1 2 3 4 5

33.   What are your software maintenance revenues?(Currency) _____/pa

34.   What growth rate have you experienced? _____%pa

35.   What growth rate are you planning for? _____%pa

36.   How profitable is this business today (1-5)?   1 2 3 4 5

37.   How profitable will it be in future (1-5)?   1 2 3 4 5

Custom Software Development

Changing client expectations, new products, new methods, new tools, lower budgets, staff shortages, and so on are the driving forces changing the face of custom software development.

Please rank the following driving forces according to their importance and their effect on the growth rate of custom software development in your business. (1 = unimportant, 5 = very important)

	Custom Software Driving Forces	Growth Rate	Ranking Importance
38.	Lower client budgets	Up/Same/Down	1 2 3 4 5
39.	Lower competitor prices	Up/Same/Down	1 2 3 4 5
40.	Shorter competitor timescales	Up/Same/Down	1 2 3 4 5
41.	Better, richer application packages	Up/Same/Down	1 2 3 4 5
42.	Kernel/blueprint applications	Up/Same/Down	1 2 3 4 5
43.	Modern software languages/databases	Up/Same/Down	1 2 3 4 5
44.	Modern software tools	Up/Same/Down	1 2 3 4 5
45.	Standards and methodologies	Up/Same/Down	1 2 3 4 5
46.	Quality improvements	Up/Same/Down	1 2 3 4 5
47.	High costs of training staff	Up/Same/Down	1 2 3 4 5
48.	Shortage of skilled staff	Up/Same/Down	1 2 3 4 5
49.	Size/complexity of projects growing	Up/Same/Down	1 2 3 4 5
50.	Other_____	Up/Same/Down	1 2 3 4 5

That's all I wanted to ask at this stage. Very many thanks for your time. May I call you again to clarify any point of detail? Are there any questions you'd like to put to me?

Thanks once again.
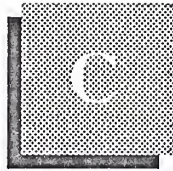
Detailed Country Forecast Database, Local Currency

EXHIBIT C-1

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995
France

Subsector	1989	1989-1990 Growth (Percent)	FF Millions						1990-1995 CAGR (Percent)
			1990	1991	1992	1993	1994	1995	
Consulting	3,295	20	3,950	4,780	5,750	6,850	8,200	9,850	20
Education & Training	2,475	21	3,000	3,700	4,500	5,500	6,700	8,150	22
Software Development	24,020	20	28,800	34,400	41,300	49,600	59,500	71,400	20
Total	29,790	20	35,750	42,880	51,550	61,950	74,400	89,400	20

EXHIBIT C-2

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995 Germany

| Subsector | DM Millions | | | | | | | | |
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	495	19	590	715	855	1,010	1,180	1,400	19
Education & Training	705	19	840	1,020	1,220	1,440	1,680	2,000	19
Software Development	2,820	18	3,330	4,000	4,750	5,560	6,450	7,600	18
Total	4,020	18	4,760	5,735	6,825	8,010	9,310	11,000	18

EXHIBIT C-3

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995 United Kingdom

| Subsector | £ Millions | | | | | | | | |
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	245	22	300	370	455	575	715	890	24
Education & Training	180	22	220	270	335	415	510	630	23
Software Development	1,310	15	1,510	1,750	2,050	2,430	2,860	3,390	18
Total	1,735	17	2,030	2,390	2,840	3,420	4,085	4,910	19

EXHIBIT C-4

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Italy

Subsector	Lira Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	345	25	430	535	670	840	1,040	1,310	25
Education & Training	185	24	230	290	360	450	560	700	25
Software Development	1,955	19	2,330	2,795	3,325	3,930	4,645	5,490	19
Total	2,485	20	2,990	3,620	4,355	5,220	6,245	7,500	20

EXHIBIT C-5

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Sweden

Subsector	SeK Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	390	21	470	575	700	860	1,050	1,280	22
Education & Training	435	20	520	630	770	930	1,120	1,350	21
Software Development	2,200	17	2,570	3,050	3,600	4,530	4,990	5,890	18
Total	3,025	18	3,560	4,255	5,070	6,320	7,160	8,520	19

EXHIBIT C-6

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Denmark

Subsector	DK Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	325	25	405	495	610	750	920	1,140	23
Education & Training	95	21	115	140	170	205	250	300	21
Software Development	1,855	18	2,190	2,560	3,000	3,500	4,100	4,800	17
Total	2,275	19	2,710	3,195	3,780	4,455	5,270	6,240	18

EXHIBIT C-7

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Norway

Subsector	NK Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	250	18	295	350	420	500	590	705	19
Education & Training	90	17	105	125	150	180	215	255	19
Software Development	1,400	16	1,620	1,900	2,220	2,600	3,040	3,550	17
Total	1,740	16	2,020	2,375	2,790	3,280	3,845	4,510	17

EXHIBIT C-8

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Finland

Subsector	FM Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	160	25	200	240	290	350	430	530	22
Education & Training	60	17	70	80	100	120	150	180	21
Software Development	875	19	1,040	1,240	1,480	1,760	2,090	2,490	19
Total	1,095	20	1,310	1,560	1,870	2,230	2,670	3,200	20

EXHIBIT C-9

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Netherlands

Subsector	Dfl Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	275	24	340	420	520	640	800	990	24
Education & Training	235	23	290	350	430	530	660	800	23
Software Development	1,650	15	1,900	2,220	2,600	3,070	3,590	4,190	17
Total	2,160	17	2,530	2,990	3,550	4,240	5,050	5,980	19

EXHIBIT C-10

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Belgium

Subsector	BF Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	2,690	24	3,340	4,150	5,200	6,450	8,000	10,000	25
Education & Training	1,540	23	1,900	2,300	2,820	3,450	4,200	5,200	22
Software Development	15,260	18	18,000	21,500	25,600	30,300	35,200	41,000	18
Total	19,490	19	23,240	27,950	33,620	40,200	47,400	56,200	19

EXHIBIT C-11

Professional Service Market Forecast in
Local Currency by Market Segment, 1990-1995
Switzerland

Subsector	SF Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	80	19	95	120	140	170	210	260	22
Education & Training	120	17	140	180	220	270	330	400	23
Software Development	440	16	510	610	720	850	1,010	1,200	19
Total	640	16	745	910	1,080	1,290	1,550	1,860	20

EXHIBIT C-12

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995
Austria

Subsector	Sch Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	320	22	390	470	580	700	860	1,050	22
Education & Training	350	23	430	530	650	780	980	1,200	23
Software Development	1,800	16	2,090	2,440	2,860	3,340	3,910	4,580	17
Total	2,470	18	2,910	3,440	4,090	4,820	5,750	6,830	19

EXHIBIT C-13

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995
Spain

Subsector	Pta Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	7,250	25	9,060	11,400	14,400	18,100	22,800	28,800	26
Education & Training	5,600	25	7,000	8,820	11,100	14,000	17,600	22,200	26
Software Development	38,800	22	47,300	58,200	71,600	88,100	108,000	133,000	23
Total	51,650	23	63,360	78,420	97,100	120,200	148,400	184,000	24

EXHIBIT C-14

Professional Service Market Forecast in Local Currency by Market Segment, 1990-1995 Rest of Europe

Subsector	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
					$ Millions				
Consulting	15	20	18	22	27	30	40	50	23
Education & Training	15	20	18	23	28	35	45	55	25
Software Development	95	25	119	145	175	215	265	305	21
Total	125	24	155	190	230	280	350	410	21

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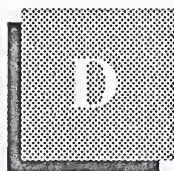
Detailed Country Forecast Database, ECUs

EXHIBIT D-1

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
France

Subsector	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
					ECU Millions				
Consulting	480	20	575	696	837	997	1,194	1,434	20
Education & Training	360	21	437	539	655	801	975	1,186	22
Software Development	3,496	20	4,192	5,007	6,012	7,220	8,661	10,393	20
Total	4,336	20	5,204	6,242	7,504	9,017	10,830	13,013	20

EXHIBIT D-2

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Germany

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	241	19	288	349	417	493	576	683	19
Education & Training	344	19	410	498	595	702	820	976	19
Software Development	1,376	18	1,624	1,951	2,317	2,712	3,146	3,707	18
Total	1,961	18	2,322	2,798	3,329	3,907	4,541	5,366	18

EXHIBIT D-3

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
United Kingdom

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	331	22	405	500	615	777	966	1,203	24
Education & Training	243	22	297	365	453	561	689	851	23
Software Development	1,770	15	2,041	2,365	2,770	3,284	3,865	4,581	18
Total	2,345	17	2,743	3,230	3,838	4,622	5,520	6,635	19

EXHIBIT D-4

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Italy

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	230	25	286	356	446	559	692	872	25
Education & Training	123	24	153	193	240	300	373	466	25
Software Development	1,302	19	1,551	1,861	2,214	2,617	3,093	3,655	19
Total	1,654	20	1,991	2,410	2,899	3,475	4,158	4,993	20

EXHIBIT D-5

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Sweden

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	53	21	63	78	94	116	142	173	22
Education & Training	59	20	70	85	104	126	151	182	21
Software Development	297	17	347	412	486	611	673	795	18
Total	408	18	480	574	684	853	966	1,150	19

EXHIBIT D-6

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Denmark

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	42	25	52	63	78	96	118	146	23
Education & Training	12	21	15	18	22	26	32	38	21
Software Development	238	18	281	328	385	449	526	615	17
Total	292	19	347	410	485	571	676	800	18

EXHIBIT D-7

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Norway

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	31	18	37	44	53	63	74	89	19
Education & Training	11	17	13	16	19	23	27	32	19
Software Development	176	16	204	239	280	327	383	447	17
Total	219	16	254	299	351	413	484	568	17

EXHIBIT D-8

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Finland

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	33	25	41	50	60	72	89	110	22
Education & Training	12	17	14	17	21	25	31	37	21
Software Development	181	19	215	256	306	364	432	514	19
Total	226	20	271	322	386	461	552	661	20

EXHIBIT D-9

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Netherlands

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	120	24	148	183	226	278	348	430	24
Education & Training	102	23	126	152	187	230	287	348	23
Software Development	717	15	826	965	1,130	1,335	1,561	1,822	17
Total	939	17	1,100	1,300	1,543	1,843	2,196	2,600	19

EXHIBIT D-10

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995 Belgium

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	64	24	79	98	123	153	189	236	25
Education & Training	36	23	45	54	67	82	99	123	22
Software Development	361	18	426	508	605	716	832	969	18
Total	461	19	550	661	795	951	1,121	1,329	19

EXHIBIT D-11

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995 Switzerland

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	44	19	53	67	78	94	117	144	22
Education & Training	67	17	78	100	122	150	183	222	23
Software Development	244	16	283	339	400	472	561	667	19
Total	356	16	414	506	600	717	861	1,033	20

EXHIBIT D-12

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Austria

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	22	22	27	33	40	49	60	73	22
Education & Training	24	23	30	37	45	54	68	83	23
Software Development	125	16	145	170	199	232	272	318	17
Total	172	18	202	239	284	335	400	475	19

EXHIBIT D-13

## Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Spain

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	56	25	70	88	111	140	176	222	26
Education & Training	43	25	54	68	86	108	136	171	26
Software Development	299	22	365	449	552	679	833	1,025	23
Total	398	23	489	605	749	927	1,144	1,419	24

EXHIBIT D-14

Professional Service Market Forecast in ECUs by Market Segment, 1990-1995
Rest of Europe

Subsector	ECU Millions								
	1989	1989-1990 Growth (Percent)	1990	1991	1992	1993	1994	1995	1990-1995 CAGR (Percent)
Consulting	18	20	22	27	33	36	48	60	23
Education & Training	18	20	22	28	34	42	54	66	25
Software Development	114	25	143	175	211	259	319	367	21
Total	151	24	187	229	277	337	422	494	21
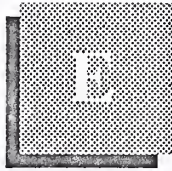
Inflation and Exchange Rates, Western Europe

U.S. Dollar and ECU Exchange Rates, 1990

Country	Currency	U.S. Dollar Exchange Rate	ECU Exchange Rate
France	FF	6.17	6.87
Germany	DM	1.81	2.05
United Kingdom	£	0.631	0.74
Italy	Lira	1,336.00	1,502.00
Sweden	Sek	6.39	7.41
Denmark	DK	7.05	7.80
Norway	NK	6.85	7.94
Finland	FM	4.21	4.84
Netherlands	Dfl	2.05	2.30
Belgium	BF	38.06	42.29
Switzerland	SF	1.61	1.80
Austria	Sch	12.77	14.39
Spain	Ptas	115.80	129.70
Rest of Europe	$	1.00	0.83

EXHIBIT E-2

Inflation Assumptions

Country	Assumption 1989-1994	Assumption 1990-1995	Change
France	4	4.5	+0.5
Germany	2.5	4	+1.5
United Kingdom	5.5	7	+1.5
Italy	6	7	+1.0
Sweden	6	7	+1.0
Denmark	6	5	-1.0
Norway	4	5	+1.0
Finland	6	6	0.0
Netherlands	2	3	+1.0
Belgium	3.5	4	+0.5
Switzerland	2.5	5	+2.5
Austria	3	4	+1.0
Spain	5.5	6.5	+1.0
Rest of Europe	8	10	+2.0
European Average	4.5	5.5	+1.0
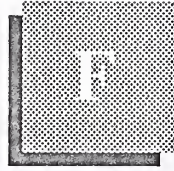
Forecast Reconciliation, 1989-1990

Exhibit F-1 shows the changes made in this year's forecast in comparison to that of the previous year. The principal reasons for these changes are:

- The general rise of European currencies against the U.S. dollar accounts for some 3.3% of the increase.

- A re-evaluation of the market size resulting from the research carried out for this report.

- The current indications of recession in Europe are assumed to be relatively short term rather than applying throughout the whole five-year period.

- The growth in the popularity of outsourcing (contracting out any or all of the whole range of IT activities) is assumed to continue as a reaction to recessionary pressures among user organisations and the growing complexity of system solutions.

- Leading computer manufacturers are expected to increasingly focus the market's attention on their software and services as they try to compensate for falling hardware margins with new revenue streams.

EXHIBIT F-1

Professional Services Reconciliation of Market Forecast Western Europe

Subsector	1989 Market			1994 Market			1989-1994 CAGR Forecast in 1989	1990-1995 CAGR Forecast in 1989
	1989 Report ($ M)	1990 Report ($ M)	Variance (Percent)	1989 Report ($ M)	1990 Report ($ M)	Variance (Percent)		
IS Consultancy	1,925	1,990	+3.4	5,100	5,410	+6.1	22	22
Education and Training	1,570	1,640	+4.5	4,120	4,430	+7.5	21	22
Software Development	11,590	12,060	+4.1	28,600	28,330	-0.9	20	19
Professional Services Total	15,085	15,690	+4.0	37,820	38,170	+0.9	20	20

*Note that systems operations was reported partly within professional services in 1989.